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ABSTRACT

This document contains five papers presented at a symposium designed to identify and discuss implications of nationwide perspectives and research studies on vocational education. Following an introduction that explains the context of the presentations, the following papers are included: "Improving Secondary Vocational Education" (Harry F. Silberman), Discussion (Nan Skelton and Wes Tennyson); "Work, Vocational Studies, and the Quality of Life" (Arthur G. Wirth), Discussion (Cliff Helling, Frank Kenney, and Helen Henrie); "Major Issues in Vocational Education in the Year 2000" (Marvin Feldman), Discussion (Tom Peek, Gen Olson, and Frank Starke); "Beyond Tinkering: Reconstructing Vocational Education" (Jeannie Oakes), Discussion (William Gardner, Dayton Perry, and Jan Hively); and "Occupationally Specific Training in High School" (John H. Bishop), Discussion (Gordon Swanson, Daniel Mjolsness, and Don Szambelan). The final chapter, "Making Vocational Education Better for Students," presents a summary of the themes raised by symposium participants and presenters and a closing perspective providing recommendations for action. Symposium participants and program are listed in an appendix. (KC)

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Re-Visioning Vocational Education in the Secondary School

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Re-Visioning Vocational Education in the Secondary School

by

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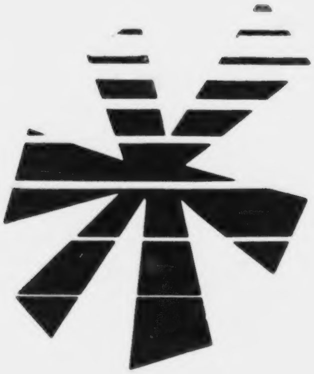

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December 1986

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Acknowledgements

This report seeks to catalyze and enlarge the boundaries of discussion of the future direction of vocational education in secondary schools. It is another in the series of reports by the Minnesota Research and Development Center for Vocational Education which focuses on clarifying the meaning of the purposes of vocational education at the secondary school level. The report is drawn from a symposium held at the University of Minnesota which was designed to identify and discuss implications of nationwide perspectives and research studies.

The symposium purpose and program was developed with the help of an advisory committee composed of Cliff Helling, Sue Holmes, Daniel Mjolsness, Gen Olson, David Pucel, Nan Skelton, William Stock, and Thomas Strom. Their suggestions proved strategic to the success of the symposium. The commissioned papers authored and presented by John Bishop, Marvin Feldman, Jeannie Oakes, Harry Silberman, and Arthur Wirth provided substance for the symposium content. The discussants selected from Minnesota to probe the messages in these papers for implications for vocational education were especially insightful and adroit. Other symposium participants provided additional perspectives in both oral and written form. To all of these people we express thanks for creating two very thought provoking and meaningful days of conversation. We hope we have been able to capture many of the highlights of this conversation with reasonable fidelity in this report. We apologize in advance for what we may have blurred, garbbled, or missed entirely.

This activity would not have been possible without the financial support of the Minnesota State Board of Vocational Technical Education, the Minnesota State Department of Education, and the Department of Vocational and Technical Education at the University of Minnesota. Special thanks goes to LaRayne Kuehl who did the word-processing for this report. The art work on the inside cover was prepared by Jim Kiehne.

G.H.C.
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CHAPTER I

Setting the Stage

The focus of this report is on future visions of vocational education in the secondary schools. More particularly, the report describes diverse national perspectives on the purposes and practice of vocational education in the secondary school and the meaning of these perspectives for educational leaders in Minnesota. The intent is that this report will provide important considerations for the policy making process and educational practice concerning vocational education.

Background and Context

Some four years ago, the Minnesota Research and Development Review Committee for Vocational Education recommended that one of the most important and urgent research and development priorities for vocational education in Minnesota was to develop more sensitive indicies of the outcomes of secondary vocational education. The Minnesota Research and Development Review Committee is composed of about 25 individuals representing special interests in vocational education in Minnesota. One of the committee's major responsibilities is to recommend research and development priorities which will contribute to improving vocational education in the state. The recommendation concerning more sensitive indicies of the outcomes of secondary vocational education resulted from the limitations of traditional student follow-up information in describing the impact of secondary vocational education and from increasing discussions of the need to re-examine the purposes of vocational education in the secondary school. It was expected that more sensitive indicators would be more effective in planning, reviewing, and providing public information about vocational education in the state.

Previous research and development. Several research and development efforts were subsequently designed and carried out to address the priority described above. This program of research and development was conducted in the Minnesota Research and Development Center for Vocational Education with funding under the auspices of a joint committee of the Minnesota State Board of Vocational Technical Education and State Board of Education as well as support from the Department of Vocational and Technical Education at the University of Minnesota.

The first research and development effort examined the history, present status, and future possibilities of vocational education in the larger context of education and work. The focus was on analysis of the original intent of vocational education, its present status in the context of education, and future societal changes relevant to vocational education. This effort resulted in the report, Purpose of Vocational Education in the Secondary School (Copa, Daines, Ernst, Knight, Leske, Persico, Plihal, & Scholl, 1985). The second research and development effort was an exploratory study of the purposes of vocational education in the secondary school as actually manifest in school practice. The focus here was on developing a more accurate picture of "what is" with respect to vocational education as it is played out day to day in schools. This study, involving extensive observation and interview activities in a sample of schools, resulted in three reports: An Untold Story: Purposes of Vocational Education in Secondary Schools (Copa, Plihal, Scholl, Ernst, Rehm, & Copa, 1985); Purposes of Vocational Education in Secondary Schools in Minnesota: Some Insights from Current Practice (Copa, Plihal, Scholl, Ernst, Rehm, & Copa, 1986); and The Practice of Equity: Access to, Treatment in, and Outcomes of Vocational Education in the Secondary School (Plihal, Ernst, & Rehm, 1986).

Place of this effort. With the above background analysis and information, the thought was that another needed component of research and development revolved around the results of nationwide studies and perspectives held of vocational education, particularly as to its future role in the secondary school. Again, the intent was to supply critical informational inputs to educational leaders in Minnesota who were and continue to grapple with the purpose of vocational education in secondary schools. To extract this needed information from nationwide studies and perspectives, a symposium format with commissioned papers and ample time for discussion was planned.

Plan for Symposium

The plan for a symposium to address nationwide studies and perspectives of vocational education in the secondary school was facilitated through the assistance of an advisory committee composed of the individuals shown in Table 1. The theme selected for the symposium was that of "Re-Vision." The concept, Re-Vision, seemed to connote the intended purpose of the symposium, that is, to consider again the purposes of vocational education in the secondary school. The goal was not necessarily to discard all that was a part of the declared purposes at present, but to re-look with fresh perspective, to hold open the opportunity for even radical change, with the hope for eventual formulation or reaffirmation of purposes which are intellectually and morally sound.

Assumptions and guiding questions. With the encouragement of the advisory committee, the decision was to "step beyond" the question of, "Does vocational education have a place at all in the secondary school?," to a more positive and provocative position by stating a series of assumptions. These assumptions were offered to the people preparing the five commissioned papers and to the other symposium participants:

1. Vocational education needs to be done to prepare people for their life roles (e.g., in families, businesses, organizations, agencies).

2. Vocational education is done in a wide variety of places (e.g., in schools, homes, organizations).

3. The secondary school is one appropriate place for vocational education to take place.

4. All people need vocational education.

With these assumptions in place, the key questions to be addressed by the symposium evolved to be:

1. How can we make vocational education better for secondary school students?
2. What knowledge and assumptions (from nationwide studies and perspectives) undergird recommendations on making vocational education better?

These questions guided selection of authors for commissioned papers and selection of other symposium participants.

Table 1

Advisory Committee for Symposium

Committee member	Present responsibilities
Cliff Helling	Director, Vocational Education, Robbinsdale School District
Sue Holmes	Executive Director, Minnesota Vocational Association
Daniel Mjolsness	Superintendent, Red Wing School District
Gen Olson	Senator, Minnesota State Legislature
David Pucel	Director, Minnesota Research and Development Center for Vocational Education, University of Minnesota
Nan Skelton	Assistant Commissioner, Minnesota Department of Education
William Stock	Specialist, Planning and Research, Minnesota State Board of Vocational Technical Education
Thomas Strom	Manager, Secondary Vocational Education, Minnesota Department of Education

Symposium format. The format of the symposium was that of a United Nations Assembly--a relatively small inner group of participants made up of the authors of commissioned papers and discussants representing diverse educational interests and a larger outer group representing vocational education practitioners, policy makers, and higher education personnel. This format was thought to provide opportunity for maximum, in-depth discussion of the commissioned papers and probing for their meaning to vocational education in Minnesota. The larger outer group of participants enhanced prompt dissemination of symposium results to a wider group of educational leaders in the state. The symposium was conducted over a two-day period, May 8 and 9, 1986, in the Vocational and Technical Education Building at the University of Minnesota in St. Paul. Those preparing commissioned papers were allotted 20 minutes to review their paper at the symposium (copies had been distributed to the inner group in advance of the symposium). This summary was followed by 5 to 10 minutes of comments from 2 or 3 assigned discussants and then discussion among the inner group for about 45 minutes. A copy of the symposium program is shown in Appendix A. At the end of each day, a period of time was allowed for discussion among both the inner and outer group of participants. The symposium proceedings were tape recorded to facilitate later analysis. At the end of the last day, discussion was deliberately turned to reflections on the impact of the symposium as a whole and suggested next steps for research and development and education policy and practice. All participants had been asked to record their reflections during the course of the symposium on forms designed specifically for this purpose.

Symposium participants. The authors of commissioned papers were selected to represent diverse national perspectives of vocational education, particularly as they relate to the secondary school. Each had been intently involved in major national studies of secondary education or as part of national groups or agencies with interest in vocational education. Table 2 presents a listing and brief description of the five authors. The charge to these authors was to address the two symposium questions listed previously, given the stated assumptions governing this symposium.

The symposium discussants were selected to represent a variety of interest groups who do or have the potential to help shape the purposes of vocational education in secondary schools of Minnesota. The intent was to include both people directly involved in vocational education and people outside vocational education who have a significant influence on its direction. The discussants and their present responsibilities are presented in Table 3. The charge to the discussants was to stimulate initial discussions of the commissioned papers by illuminating and examining the undergirding assumptions and consequences of the visions presented for vocational education.

The outer group of symposium participants was selected because the presentations and discussions were thought to be of wide interest and to encourage prompt dissemination and impact. The outer group of about 40 individuals participated in discussion sessions at the end of each day. These participants are listed in Appendix B.

Report Format

What follows are chapters containing the commissioned papers and highlights of the discussion stimulated by the paper. The last chapter summarizes participants' reflections on the symposium as a whole.

Table 2

Authors of Commissioned Symposium Papers

Author	Brief background
John H. Bishop	Educational economist, currently the Director of the Center for Research on Youth Employability at The Ohio State University. He also serves as Associate Director for Research of the National Center for Research in Vocational Education.
Marvin Feldman	President of the Fashion Institute of Technology in New York City and a former member of the National Advisory Council on Vocational Education.
Jeannie Oakes	Social scientist with the Education and Human Resources Program at the Rand Corporation in Santa Monica, California. Her most recent book is entitled Keeping Track: How Schools Structure Inequality.
Harry F. Silberman	Professor of Education at the University of California at Los Angeles. He served as chair of the National Commission on Secondary Vocational Education which resulted in The Unfinished Agenda.
Arthur G. Wirth	Professor Emeritus of History and Philosophy of Education at Washington University in St. Louis. He has written extensively on the work of John Dewey, technology, education, and work.

Table 3

Discussants at Symposium

Discussant	Present responsibilities
William Gardner	Dean, College of Education, University of Minnesota
Cliff Helling	Director, Vocational Education, Robbinsdale School District
Helen Henrie	Deputy State Director, Minnesota Board of Vocational Technical Education
Jan Hively	Deputy to the Mayor, Minneapolis
Frank Kenney	Executive Director, Project for Pride in Living (PPL) Industries, Minneapolis
Daniel Mjolsness	Superintendent, Red Wing School District
Gen Olson	Senator, Minnesota State Legislature
Tom Peek	Staff Member, Center for Urban and Regional Affairs, Hubert H, Humphrey Institute for Public Affairs, University of Minnesota.
Dayton Perry	Program Review Specialist, Secondary Vocational Education, Minnesota Department of Education
Nan Skelton	Assistant Commissioner, Minnesota Department of Education
Frank Starke	Director, Alexandria Vocational-Technical Institute
Thomas Strom	Manager, Secondary Vocational Education, Minnesota Department of Education
Gordon Swanson	Professor, Department of Vocational and Technical Education, University of Minnesota, and President-elect, Minnesota Vocational Association
Don Szambelan	Manager of Technical Training, Publications and Graphics, CPT Corporation
W. Wesley Tennyson	Professor, Departments of Vocational and Techncial Education and Educational Psychology, University of Minnesota

CHAPTER II

Improving Secondary Vocational Education

Harry F. Silberman

We were asked to suggest ways to improve secondary vocational education and give our reasons. The letter of invitation contained four guiding assumptions which made the task much easier, for those assumptions removed some of the present obstacles to improvement. In the first assumption the purpose of vocational education has been broadened beyond job training to include preparation for the students' major roles in life. Thus, secondary vocational education is assumed to be an integral part of general education. That gets rid of the education vs. training controversy. The second assumption, that vocational education occurs in a variety of places, including home, school, workplace, and community, recognizes that it is a responsibility of the larger society, and opens the door for field-based learning, cooperative education experiences, and for other community benefactors to provide mentoring and apprenticeship relationships. The third assumption, that the secondary school is a proper place for vocational education to occur, presumes the provision of adequate resources and dispenses with recent proposals to delay vocational education until after high school completion. That settles the problem of its educational legitimacy. The fourth assumption, that vocational education is for everyone, eliminates the tracking problem and presumes equitable treatment for all groups.

Taken together, these four assumptions envision a much higher status and priority for secondary vocational education than is accorded it by present school reform advocates, not to mention the federal administration, whose recent budget proposal eliminated funds for the improvement of vocational programs.

I would like to comment briefly on ways to improve the quality of secondary vocational education under the protective umbrella of these four benevolent assumptions. Then I would like to discuss the status problem that appears to be undermining these assumptions, and consider a few alternative futures that may offer some hope for eventual restoration of the status of secondary vocational education.

Four obvious ways to improve high school vocational education are: (a) appeal to a wider range of students, (b) raise the quality of the teachers, (c) raise the quality of the learning experiences, and (d) raise the quality of the management of secondary vocational education.

Improvements That Are Possible If We Assume Secondary Vocational Education Has High Status and Priority

Appeal to a wider range of students. A "good" program is one that is attended by a critical number of top students, but such students are less likely to enroll in vocational courses. When you find a large number of college preparatory students in vocational programs like Benson Tech in Portland, or Don Bosco Tech in Rosemead, California, these programs enjoy glowing reputations. The caliber of students in a program makes all the difference. We need to attract the best and brightest students to secondary vocational education. For vocational education to be attractive it must promise genuine future opportunities, and also provide an enjoyable and stimulating learning environment.

Proposals to broaden the range of students may threaten those who fear that the present group of vocational students will be abandoned. But the notion that secondary vocational education can only serve the non-college bound stands in the way of program improvement. The future manager, engineer, or surgeon needs secondary vocational education as much as anyone. In a survey we conducted in connection with the Commission on Secondary Vocational Education of over two hundred vocational educators, almost all respondents were against channeling students with less academic ability and motivation into a vocational track. The concern with tracking students into homogeneous groups is not only the fear that it will lead to a non-democratic dual system of education, but that it will seriously reduce the quality of education by reducing the chances for students to learn from each other. The presence of more able students in a class is essential to the quality of its instruction. Clearly, additional resources will be needed to provide a truly comprehensive program that will accommodate a broader group of students. Furthermore, instructional methods will have to be altered to accommodate a greater range of individual differences. For example, greater use of peer tutoring may be necessary.

In my opinion the advantages of appealing to a broader segment of the student body override the difficulties of adapting the instruction to a broader student population. Vocational education would gain a broader base of support, especially among parents of college-bound students who are very influential with boards of education. The status of vocational education would probably rise. Indeed, Rust (1985) describes a recent shift during the past ten years in Norwegian secondary education which has made vocational education the upper, or elite, curriculum track. Vocational courses are in great demand and only students with the highest grades and evidence of extracurricular experiences are admitted. The best universities in Norway recognize vocational courses in their admission requirements. With a limited supply of vocational education courses, students compete for the available slots, prompting great selectivity. There are some complaints that the general academic courses are being used as a dumping ground for the less able and least motivated students, who are excluded from vocational education. Low achievers, for example, aren't permitted to take advantage of the scarce apprenticeship opportunities.

I am not advocating that vocational education in the U. S. become an elite enclave, only that it be clearly accessible and attractive to all students. Some steps are already being taken to mitigate the restrictions of increased academic graduation requirements. To solve the problem of access, some districts permit college bound students to choose vocational electives by extending the school day or the school year. Some allow academic credit for vocational courses comparable in content and rigor. Some have included vocational courses as part of the core graduation requirement. A few even provide vocational projects at the elementary school level.

Raise the quality of the teachers. Ideally, we should recruit our teachers from among the most able and desirable role models in the country. Next to reproduction and parenting there is no more vital function for the perpetuation of the human species than teaching.

We should probably use modern "head-hunting" strategies in recruiting vocational instructors. We should open up the credentialing system and recruit, the same as business does, for top talent. From among the most talented experts, we might canvas the country for persons with desired attributes of caring, patience, communication skill, persistence, and enthusiasm, who genuinely wish to help students, and actively entice them with sufficient incentives to enter teacher training. When we have recruited the best and brightest members of our population into secondary vocational teaching, its status and prestige will grow. Such persons are more likely to effectively disseminate the value of the learning that occurs under their supervision, and may be more equipped to undertake collaborative educational ventures with the private sector. But, they also may require twice the money we are now offering if we are to be competitive with the private sector. An alternative approach is to cooperate with the private sector in sharing the best, most talented performers via personnel exchanges.

Another way to attract first rate teachers is to offer training scholarships for superior students who are interested in a particular occupation, with the understanding that after they have worked in their special field for a few years, they would take time out to devote the next four or five years to teaching.

We also can improve the quality of teachers with better teacher preparation programs. Some graduate students and I have been evaluating UCLA's vocational teacher training during the past quarter. We analyzed the course materials, observed classes, and interviewed instructors, students, and former graduates who are now teaching vocational courses at the secondary and community college levels. We also conducted a survey throughout Southern California of former graduates and administrators in the school districts where they are teaching. In addition we collected data from vocational and adult teachers who had received their preparation in other programs, with the expectation that the comparisons would provide interesting clues about how to improve our own program.

Most of these comparisons were not statistically significant. No significant differences were found in responses of vocational and adult teachers, or in comparisons of the attitudes of vocational teachers from different subject areas, toward their preparatory program. Comparisons among teachers who obtained their preparatory courses from different colleges were also not significant. We have some evidence that this lack of difference is due to large within-group variation in quality of instructors who provided the teacher training. This strong variation was evident in the teacher preparation classroom observations, in the interviews, and in the survey responses. The strong emotional tone of open-ended responses given by graduates of the courses revealed some instructors were exceptionally helpful, and some were not helpful at all. These responses indicate a potent overriding influence of instructor quality, which may have masked differences among subgroups. It is clear from our study that more attention needs to be devoted to recruiting first rate instructors to teach these courses. We recommended ongoing evaluation of the classroom performance of graduates of the credential program to detect areas that need to be strengthened in the program and also to identify outstanding teachers who might be recruited as potential instructors for the UCLA program. The need to carefully screen teachers exists both at the secondary and post-secondary teacher training levels.

Much has also been written on the need to provide adequate time, funds, respect, and authority for teachers to perform their job in a professional manner. Lortie (1986) suggests that the decline in teacher satisfaction between 1964 and 1984 is due to "increasing tension between the qualifications and self-images of teachers in large school districts, their position in the formal system of governance, and their ability to make firm decisions in matters related to their own classrooms and students." He asks, "Will teachers who have soured on their work serve as attractive models for the young people who are now choosing occupations?" When we get good teachers we must treat them well.

Raise the quality of the learning experiences. When teaching courses on learning at UCLA I always ask students to recall their most significant learning events. We then analyze these events to determine what features they have in common. Over the years I have found that students credit their most positive learning experiences to those situations where they have been trusted with some genuine responsibility and given the freedom to complete important tasks without someone checking up on them every minute and telling them what to do, how to do it, and when to do it. They want to be treated as adults. Significant learning events generally involve a realistic problem situation, often with some wise mentor or benefactor in the background who serves as a role model or coach. The learner is typically thrust into a position of responsibility from which there is no easy escape. Usually there are potent consequences that are contingent upon the learner's performance, such as strong peer approval or disapproval. It may be more possible to provide these features in field settings than in the classroom.

Field-based learning opportunities help students make contact with adults in work settings to learn a variety of skills that identify one as an adult in our society. Recognizing the value of such learning, Ernest Boyer (1984) recommended that all high school students be given academic credit for performing community service. He argued that it would help young people understand that to be truly human, one must serve. Perhaps we should judge schools and reimburse them by the extent to which they provide opportunities for young people to be of service to the community.

In my visits to various high schools around the country I was most impressed by those programs that provided a tangible service, e.g., child care, food preparation, dental care, residential repair, health care, tutoring, assistance to senior citizens, manufacture of home appliances, etc. The dedication and involvement of those students in cooperative team projects rivaled anything else that I saw.

Field-based learning doesn't always go so smoothly. Rob Shumer, a doctoral student at UCLA, found that the supervising teachers who coordinate field activities of students can help or hinder the learning that takes place. He is doing an ethnography of a Medical Magnet High School in south central Los Angeles. The school is for students interested in health occupations. The idea is to teach students subject matter such as biology and chemistry in the course of working and to observe that subject matter being applied in actual hospitals under the supervision of medical personnel. He observed work sites that students and school staff agreed were effective and ineffective learning environments. At the effective learning sites a school supervisor accepts responsibility for the education of students, persuading them to be more assertive in asking questions, and getting employees at the work site to give students responsibility. Effective supervisors get the students to do their preparation before going to the site. They work with employees and encourage them to help students who are having problems at the site. When the school supervisors sense that the students have learned what there is to learn at one site, they move them to a new site.

School supervisors also serve as role models for students by asking questions and exhibiting a willingness to get involved in bench work as active learners at the site alongside the students. They can collaborate with the employees at the site in planning learning activities for the students, and they can express their appreciation to these employees for helping, a courtesy which means a great deal to them.

On the negative side, at ineffective learning sites, school supervisors get so busy doing administrative and clerical work that they spend little time at the hospital even though they are scheduled for lengthy periods of supervision. Some spend a few minutes at each site, record the necessary attendance data, and are in a great hurry to get to their "real" duties back at the school. They don't understand what is going on at the site and do not fulfill an instructional function during their brief visit. Unless there is a behavioral problem that requires them to transfer the student to another site they quickly excuse themselves, almost as if they are intruding. They feel no strong need to work with hospital personnel to insure that students understand the relationships and connections between academic knowledge and the practical applications of that knowledge in the hospital setting. It is as if such school supervisors do not accept responsibility for the education of students outside the classroom, even if that is their designated function. Perhaps the traditions of school teaching prevent them from perceiving their educational role in a broader perspective. Perhaps teachers perceive themselves only as classroom performers, who have little to do with the growth and development of students outside the classroom.

In the final analysis the students must attain responsibility for their own learning. Shumer's notes reveal that students are very much aware of the learning environment at their work sites:

--Jerry is never too busy to talk to me about my curiosities.	or	--I didn't like the attitude people had about us young kids poking around in people's business.

--The nurses really let me take over their duties, which was a lot of responsibility.	or	--They didn't even notice I was there.
--I like having a person work with you.	or	--If your supervisor assigns you to someone who doesn't feel like being bothered, it makes you feel as if you're in the way and you just don't feel like coming back.
--I like being able to work with someone side by side, not behind or in front of.	or	--My supervisor didn't even try to teach me about the site.

I believe more field-based learning, if properly supervised, is one way to improve the quality of secondary vocational education. One employer told me,

> Students are cutting their regular classes during the week but showing up on Saturdays at the bank for six and a half hours for our banking program.

Business, government, and labor might be encouraged with tax incentives to greatly expand such programs of educational field experience. Only two percent of vocational money is now spent on cooperative education, yet it is generally viewed as the most successful form of vocational education. Schools must seek out more opportunities to collaborate with business, labor, and the community in designing better learning experiences for youth.

Improve the management of secondary vocational education. To improve the quality of education, many governors and state legislators are busily implementing top-down management systems patterned after Frederick Taylor's principles of scientific management. I don't think that tighter management is the key to improving secondary vocational education. We have already gone too far in that direction in the past few decades. The preoccupation with legislating detailed regulations for the bureaucratic control of schools has separated teachers from policy making and has removed opportunities for them to exercise professional judgment and initiative. The most important outcomes of secondary vocational education are difficult to measure objectively without trivializing them. Most accountability schemes have only served to create rigid and costly perfunctory rituals which are a waste of time and divert attention away from the more substantive but subtle aspects of teaching and learning. These schemes encourage teachers to be accountable rather than responsible. Besides, most of the important purposes of vocational education in secondary schools are not uniquely attributable to specific vocational programs, but rather are synthesized through the cumulative interaction of home, school, and community environments with the total history of the individual.

In a previous paper (Silberman, 1983), I suggested that the emphasis on having everything tightly accountable stems from a fundamental distrust of the people in the delivery system. Once distrust begins to erode the relationship, no amount of tests, controllers, or inspectors are going to turn it around. You can have all the external quality control you want, but if you have a management that fundamentally does not respect and trust the employees, and if the employees do not care about quality, you will have problems. It is easy to finesse or circumvent a regulation, or to honor its letter rather than its spirit. Regulation and reporting schemes have suspect validity as quality control devices. Improvement in the quality of teachers might generate enough public trust to permit alternatives to top-down management. For example, the best seller by Peters and Waterman, In Search of Excellence: Lessons from America's Best-Run Companies, contains ideas that might be used, such as a bottom-up management system that would place ample discretionary resources and decision-making authority at the local level, while retaining central monitoring of a few key values pertaining to client satisfaction.

Future Improvements That Are Possible If We Assume Secondary Vocational Education Does Not Have High Status and Priority

In the previous section I assumed that additional resources were available to raise the quality of teachers, students, and learning experiences because we accepted vocational education as a legitimate and integral part of a comprehensive secondary curriculum. If we assume it does not have that status and priority, that it is separate from general education, what is our hope for its future?

Secondary vocational education costs more than academic education. It does not provide efficient custodial care with its equipment, space requirements, transportation expenses, and smaller enrollments. Now we are talking about taxpayers money, not education. The usual solution to the cost problem is to consolidate or regionalize the more costly vocational programs in area centers. But this solution has exacted a toll in further separating vocational and academic students. The question here is whether the regionalization in area vocational schools is the first step toward a dual system of secondary education. If that is our intent, it ought to be acknowledged in a clearly stated public policy; but if such a separation is merely the inevitable but unwanted consequence of insufficient funding, then steps must be taken to restore the comprehensiveness and balance in secondary schools.

In some California districts, as academic course requirements have increased, fewer high school students are able to attend courses in the regional occupational programs and centers. Students now have less time for such electives. Consequently, some training classes had to be closed. To make up for the lost reimbursements, some programs and centers have recruited more adult students. Others have been actively recruiting high-risk secondary students and dropouts. They offer these students assessment, counseling, and remedial courses so that the students can rectify skill deficiencies and thereby meet admission requirements for the regional occupational programs and centers. High risk students are offered concurrent enrollment in a minimum day program in the high school and three or more periods in the regional occupational center or program. In cases where there is a transportation problem, one class is waived from the already minimum day requirement. Such arrangements help to restore funding levels to maintain facilities and staff, but high risk students require more help, and increasing the number of such students could stigmatize those programs and actually reduce their ability to attract additional students and resources in the future.

One diagnosis of the status problem with secondary vocational education is that those courses have no place in the career path of the young urban professional. If it were a prerequisite for college admission, that would be different. We are not talking about education here, but about credentialing, status, and getting ahead. In their pursuit of fame and fortune the "best and brightest" high school students have little time for elective vocational courses. Future lawyers and financiers do not take shop courses while preparing for the university.

The attraction of higher education is quite clear. Higher degrees lead to better jobs, jobs with more prestige, and better working conditions; but the costs associated with the pursuit of such jobs need to be examined. Better jobs aren't necessarily more productive; the status of a credential is determined more by its contribution to personal success than by its social contribution. Reich (1983) has written of the dysfunctional economic consequences of the "best and brightest" students avoiding economically productive jobs in favor of more comfortable and prestigeful "paper entrepreneurial" positions in law and finance. Spence (1985) devoted her American Psychological Association presidental address to the topic of achievement and success. She expressed concern that in our country, with its success orientation, "getting ahead" is so important that nothing else matters; it transcends all other values, including health, family, community, integrity, and quality of work.

The problem grows progressively worse as each generation of success-driven graduates assumes positions of adult leadership. Those who ascend to policy making positions from strictly academic backgrounds, have never experienced, and will not comprehend, the value of secondary vocational education. They will accept the popular rationalization for ignoring secondary vocational education, that early specialized skill training somehow interferes with general education. They will associate secondary vocational education with, (to use Gordon Swanson's term), "short" education (Swanson, 1982). It will be reserved for someone else's children; "educate the best, and train the rest."

Obviously, the solution to the credentialing problem is for employers to assess all the competencies they are looking for in job applicants and ignore those without such skills, regardless of credentials. The problem is that skill assessment is very costly, and many employers are not certain about what competencies they are looking for beyond general ability and congeniality. MIT didn't get the label of "charm school" for nothing. The credentials obtained from a long education effectively screen out those applicants who do not exhibit behavior conducive to the orderly and congenial conduct of business. Placement in preferred jobs is more like being accepted into a fraternity than being awarded a merit badge for job skills.

If the source of the status problem of secondary vocational education is its association with short education and bottom track credentialing, what options are available to improve its status? What alternative futures can be envisioned that might lead to the restoration of vocational education as an integral part of the secondary education of all students? The following three items are offered with the intention of generating a discussion of other alternatives. There is no hard evidence to support these possibilities.

Reductions in the size of high school graduating classes in the next decade could increase the demand for secondary vocational education. The burgeoning population of labor market entrants in the 1960's and 1970's due to the post WWII baby boom exacerbated the unemployment problem. Increasing numbers of youth were left with the option of choosing between unemployment and continuing with their education. The surplus labor supply prompted an escalation of credential requirements for jobs that previously did not require such credentials. Ivar Berg's book on this topic, *The Great Training Robbery*, came out in 1970.

Since the labor supply of high school graduates will continue to be diminished into the 1990's, there may be a halt to the present enthusiasm for continuing to lengthen the period of schooling. Short education may regain some of its status in the face of labor supply shortages. That could give secondary vocational education a renewed role in preparing youth for employment.

A new version of the sputnik phenomenon could prompt a reassessment of the declining priority of vocational training in the United States. In Russia, the major educational reform of 1984 to promote vocational training education moved millions of students away from careers requiring higher education (Zajda, 1984). Even young children in the U.S.S.R. combine basic skills with hands-on experience in a job--growing agricultural plants, repairing visual aids, and making toys and various useful objects for their school, kindergartens, and homes. Although only a very remote possibility, if a future resurgence of the Soviet economy did challenge U.S. industrial supremacy in the international marketplace, the usual scapegoating of our education system could result in new American educational reforms that emulate aspects of the unpopular Soviet initiative to restore the work ethic and match their economy's labor needs more efficiently. Secondary vocational education would be the beneficiary in the United States.

Underemployment of increasing numbers of people with professional credentials could inhibit the inflation of credentialism and re-establish the value of short education. With the aging of the members of the post WWII baby bulge in the labor market, the number of high status positions available for subsequent generations of high school and college graduates is diminished, especially in an era of rapid growth of low-level service jobs and late retirements. As that exceptionally large group moves into leadership roles in their 40's and 50's in the next few decades, its members will block the promotion and upward mobility of the present generation of college youth, creating intergenerational conflict at work and perhaps a reassessment of the ability of long education to deliver on its promise of self satisfaction and the good life. Horatio Alger could meet his greatest challenge in the MBA's inability to achieve an executive position. Richard Freeman and James O'Toole sounded this alarm in the 1970's, but their description may have been premature. The prophecy of youth's disenchantment with long education may not be realized until the 1990's.

A rash of research and evaluation studies in the field of professional education will likely appear during the next few decades. These will critically examine the dysfunctional properties of professional education and credentialing. We are already hearing about graduates of long education, with advanced degrees, beginning to enroll in short education programs to acquire salable skills. The higher credentials, obtained in order to get ahead and successfully climb the career ladder, may or may not be associated with competence or productivity, but the real challenge to the inflation of credentialism will not come from its separation from education and learning, so much as from the shortage of high status positions. The value of investing in costly forms of long education will have to be reexamined. The value of short education and education for its own sake may assume a more important role.

Summary

If we accept the assumptions cited at the outset of this paper, that vocational education has a legitimate role at the secondary level, it should be possible to improve its quality. This can be done by redesigning the program to appeal to a broader range of students, and by actively recruiting its teachers from a broader pipeline of talented persons, exposing them to better teacher training, and providing them with improved working conditions. The quality of field-based learning opportunities can also be raised and such programs can be greatly expanded. Finally, the management of these programs can be improved by finding alternatives to the growing tendency toward top-down, legislated, and bureaucratic management. Such changes can be well along in a period of five to seven years.

If the assumptions cited at the outset of this paper are unrealistic, however, the above changes will not be feasible for the forseeable future. In place of those assumptions, some observers have argued that the inherent problems of tracking and credentialing are responsible for the common perceptions that academic studies associated with long education, are the best preparation for the most prestigious occupations, and that secondary vocational education programs, associated with short education, have no general educational value and only prepare people for low-status jobs. Some believe that the vision of a truly comprehensive secondary curriculum for all students has outlived its usefulness, and that it should be replaced with a purely academic curriculum. If these latter assumptions are substituted for the earlier ones, the scope for improvement of secondary vocational education in the short term is certainly much more constrained and vocational education may disappear from the high school curriculum. Our best hope is that demographic changes and the international economic environment will combine to render these latter conditions untenable. Thus, the worst case yields short-term pessimism, but long-term optimism.

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Highlights of Discussion Following Silberman's Presentation

Skelton: If you (Silberman) are right that in the long term things will turn around, then we don't need to spend a great deal of time fussing about the short term "difficulties." A better way would be to act now in such a way as to create that future.

Is the issue to raise the quality of our students? Or is it that our students in vocational education do not feel special--do not have a sense of pride? Is it also that our vocational education teachers do not have a sense of pride in what they do? My personal feeling is that there's nothing wrong with the kids--it's that they do not have a sense of specialness and that we need to figure out ways to create that pride. We may be missing an opportunity by not going to the kids and asking, "What would it take for you to become excited about a vocational course or program?" I think we have a real opportunity in the student organizations to help us get that kind of dialogue going among teachers, students, and employers.

We also need to find a way to keep teachers current. We could talk about what mechanism we could use to give teachers "time out" to stay current. I like what Harry (Silberman) is saying about sending students out to do community service. If within a 10-day cycle students were out 1 day, teachers could be engaged in inservice on that same day.

I particularly liked what you (Silberman) said about students needing adult mentors. It is very important--particularly in vocational education--to find those adults who are models of excellence, who are proud of it, and who are willing to spend time with our students.

One thing we might do is spend some time imagining, "If vocational education could be the best that it could be in the next five years, what would it look like?" Once we designed that, we could ask what we would need to do to

A Note About These Highlights

This is an excerpted transcription of the discussion following the summary of this paper. We have excerpted what we believe is a representation of the variety and diversity of ideas expressed in the discussion. In some instances we have taken some liberties in order to make sentences complete and to fill in words which are unintelligible on the tape due to coughing, laughter, or other types of sounds which tape recorders seem to adore. Participants have had the opportunity to review the comments presented here.

create the worst scenario: "If we wanted to kill off vocational education in the next five years, what could we do and who could we get to help us destroy it completely?" About the status question, you (Silberman) said that high-risk students require help and that increasing the number of such students within vocational education programs could stigmatize those programs and actually reduce their ability to attract additional students and resources in the future. That poses a real dilemma for us. When we're trying to improve the status, one thing we think we need to do is to go to those people who we think have status. But it raises a real ethical question about those students who have as much right and who we know need these programs. I don't know if we gain status by not associating with those people who we think have less status. I hope we don't try to push out what we perceive to be the low-status students so that somehow our position is stronger. The only way we really gain status is by our faith in ourselves and our own pride in what we do. We need to deal more on the pride issue and on the specialness issue and less on weeding out the less desirable.

Tennyson: I see many teachers who are frustrated by a system that is unrewarding, that doesn't recognize their needs--particularly their need to feel they're in control over their own professional activities. The best vocational program in the world is not going to go anyplace unless we address that larger problem. All is not right out there in the schools.

Dr. Silberman poses several alternatives, but the possibilities he offered are all external, beyond my control. Hopefully those ways he suggests to improve vocational education will happen, but I haven't heard a consideration of alternatives which are under our control. Let me suggest that there are other alternatives. Certainly, we could do something about the curriculum; we could make it more meaningful to all students. We need to establish an expectation for secondary vocational education that would be new and somewhat different than what we've had in the past. This means that the learning of a skill can mean more than merely providing someone with a living or meeting society's needs. I like to think that vocational courses can be as liberating as any courses taught in the schools. I believe that.

It seems to me that even the most narrow training for a skill contributes something to the goal of liberation because skill training teaches us something about our potentiality. And mastery of that skill gives us greater control over our own lives. I think we need to go further along that line. Truly liberating vocational education can assist students to learn trades in the total context of human behavior and social aspirations. Educational efforts that enable students to discover themselves and their own aims and to understand their relation to fellow man and larger purposes would, indeed, be relevant to those who would become the managers and the lawyers and the bankers. Once we discover what it is we (vocational education) can be, we need to communicate this with those who structure the school system. I assume this must be done individually and in some unified way. This requires an understanding of power and the ability to influence without defensiveness. At the present time, I feel that the voice of vocational educators is not being heard. What are we doing in our teacher education program to prepare teachers to have their voice heard?

Silberman: Regarding the issue of raising the quality of students, I think we want a more representative mix, but we're going to have to experiment with what the proportions should be in that mix. My guess is that currently we have too many kids from the bottom of the ability distribution to make it work, and I think we have to get a more balanced distribution. I'm not proposing to exclude the kids in vocational education now, but to appeal to a wider range of students. We need a critical mass of high ability students to serve as role models.

Regarding the issue of doing things within our control, there are some things we can do and we're trying those in various places around the country. One of the promising things we see is school districts that are making vocational education prerequisite for graduation. That's very encouraging. Also, some school districts are allowing vocational courses to be substituted for academic requirements. That's a positive step in raising the status of vocational education. In some places, they're extending the school day and the school year to give college preparatory students an opportunity to take some vocational courses.

Some things are being done, but the big picture is that if you look at the landslide of curriculum reform in this country today, the prospects for secondary vocational education look grim. Perhaps it's going to take an external calamity to turn that around. Vocational educators have been standing up and are being heard by legislators and school boards, but their comments are typically viewed as self-protection. They are listened to with half an ear. I heard someone say, "How can we raise the salaries of vocational teachers? We can't even raise the salaries of our math and science teachers!" These status differences are built in. We need more of the best and brightest, who can convey the message in a different dialect, who can convey the value of the learning that takes place in vocational education and can disseminate that message more effectively.

Perry: Is high school vocational education required for admission at any college or university that you know of anywhere around the country?

Silberman: Not that I know of. That's the problem, and when you try to get a group of faculty members to consider it, they'll just turn their heads.

Perry: Do any institutions use competency testing to give advanced placement or credit for vocational activities?

Silberman: Not that I know of.

Helling: I'm worried about raising the standards by getting better students. When we talk about "quality" students, what are we talking about? We're falling into the same trap by thinking that those are the academically capable students. And, of course, we all know that the academically capable students may have a head start, but they don't eventually make it farther than any of the rest. Quality is a function of the value system of the judges.

Feldman: I don't think we want to raise the standards. I think we're kidding each other. Just like we don't want to solve the dropout problem. We know that if we get rid of summer vacation, there are profound changes in dropouts. Nobody has the courage to say that the system that was set up for a different age, with all that structure, has got to be blown up and thrown out. What is the purpose of secondary vocational education? If it's going to be job training, I'll kick you in the knee. We are lying to each other. I used to think there was a conspiracy out there, but now I think we're the enemy. And we know better. When I've thought about being a student in high school vocational courses, the thing that angered me was that I didn't know what they'd taught me in vocational education. I didn't know that when I was putting in racing cams that that was "harmonic motion." I didn't know when I was doing a brace system, that that was Pascal's Theorums. For 30 years I resented the fact that nobody told me what we were learning in vocational education at the time we were learning it because I don't think they even knew.

We don't have the guts to say we don't need state directors anymore, we don't need area vocational schools anymore. We'd have to talk about vocational education as the education of kids and not industries. We don't want to say that. We're having another meeting, talking to each other again.

All of us in this room have devoted our careers to the education of the working people. Nobody else speaks for that group of people but us, and I think we're letting them down more and more because we're being too defensive. People are afraid of advocacy, people are afraid of commitment, passion, organization. They don't know how to deal with it. We happen to be in a hiatus in leadership in our field right now. But as Wes Tennyson said, once we get the purposes redefined and clarify issues, organization follows quickly. Working people need advocacy. The universities are not speaking for working people and neither are any of the other systems. We're the only spokespersons for working people.

Skelton: The way not to be reactive is not to be reactive. You can't do both things at one time. You can't proact and react at once.

Copa: Wes Tennyson raised the question, "How do we exert power or gain control over resources without being defensive?" We've discussed three notions of where we get some power/status today. Harry Silberman said that one way we gain power is by appealing to higher ability students. By appealing to their "academic value system," they will value us and we'll have some power in the schools. Nan Skelton said that power is intrinsic, internal. It is how you feel about yourself. If we can assist students in taking pride in what they're doing in vocational education, they will acquire power on their own. Marv Feldman said the source of power is external to the school. It's in the industries and in the areas we prepare people for. He's saying that we should look outside the school to apply some pressure on the school. Are these three sources of power at odds with each other? Or can they be pulled together?

Simply developing pride-in-self may not cut it. While you may feel good about yourself, you are not able to participate as an equal partner in the distribution of resources because of the power of others. We need additional ways to garner status or a sense of power for the students that we're serving.

On another issue, in the notion of revision is the dilemma of the old and the new and the question of what to retain and what to change. Vocational education across the country is at a point right now of thinking about, "Shall we change or not?" It certainly is a time for leadership, a time to make a decision, to pick a direction and make a commitment, and perhaps leave some things.

CHAPTER III

Work, Vocational Studies, and the Quality of Life in America

Arthur G. Wirth

When approached by George Copa, I said I had no experience as a vocational educator. I had studied changes in work during the past decade, and had just finished a chapter for the 1986 National Society for the Study of Education Yearbook entitled, "Work and the Quality of Life in America." On reading it, he said, that with editing and extrapolations for vocational education it might be useful for this conference. Thus, we have "Work, Vocational Studies, and the Quality of Life in America."

My comments regarding vocational education are contained partly in the body of the paper and partly in extrapolations at the end. The comments are grounded partly in my assessment of changes now under way in work, but also in my conviction that we are in a major transition in human history. I argue that for the sake of our national welfare and the possibility of a sustainable planet we need parallel designs of work and education grounded in our democratic values and in ecological concerns.

It is relevant to include talk about quality of life, partly because we are aware now that the quality of American life is heavily dependent on the quality of life at work, and partly because we need to clarify what kind of people we want to become for entering the second millennium.

I begin by identifying the tension between two underlying value traditions in American life.

> **Few trends could so thoroughly undermine the very foundations of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for their stockholders as possible. This is a fundamentally subversive doctrine. (Friedman, 1965, p. 133)**
>
> **A democratic political economy must begin and end with the person-in-society, seeing him as both end and means, and combining his reason and his actions in empowered participation. (Silvert, 1977, p. 117)**

The Background

American society has been moved by these two visions of its destiny:

1. An ideal of access to unfettered economic competition in the marketplace, with management's prerogative to secure efficiency to maximize profit. Freedom of economic action is assumed to be the pre-condition for all other freedoms, and for a boundless increase in the material standard of living.

2. A vision of the democratic ideal of a society of informed free men and women participating in the formation of constitutions which honor human dignity and the conservation of the bounties of nature.

In the evolution of American experience, both work and schooling have been affected by the tension between these two value orientations. The tension is heightened at present as we confront three momentous global changes: (a) the emergence of a computer/robotics/communications revolution comparable in its social effects to the advent of the railroads and the automobile, (b) the thrust of the United States into a competitive world market, and (c) threats to ecological well-being due to unprecedented economic and population growth.

After sketching some dimensions of the changes in work now under way, I shall examine two fundamental value choices we confront about the design of work--choices with profound consequences for the quality of life in America. I add a perspective from the Worldwatch Report (Brown & Wolf, 1985) which points to issues mainly neglected in current debates about work and school. I end with some conjectual extrapolations for vocational studies.

We are at the beginning of a third major change in American work life. At the time of the founding, after breaking with feudal restrictions, we were overwhelmingly self-employed--in farming, the trades, and small commercial enterprises. Agriculture dominated, with four-fifths of non-slave Americans working on farms. By 1900 that figure had been halved to 41%, and by 1985 to 3-4% (Carnoy & Levin, 1985).

The corporate industrial revolution created a radically different work life. By 1985 the shift from self-employment to wage employment, and from employment in small to large enterprises had been effected. Corporate bureaucracies with top-down managerial directives became the American way at work. It was an approach that combined the free market ideology of Adam Smith with the scientific management controls of Frederick Taylor. Democratic process was ruled irrelevant in daily work because competitive reality decreed unquestioned managerial authority. Democracy belonged in the political realm with the opportunity to vote periodically. As the twentieth century unfolded work became more complex but remained hierarchical and fragmented.

With the goal of cutting costs and centralizing control, labor was routinized and de-skilled at the bottom and increasingly at middle levels. Only those at the top retained comprehension of the overall process of production. American corporate capitalism, when combined with the power of science and technology, worked. It brought longer life, and a material standard of living that was the envy of the world (Carnoy & Levin, 1985, pp. 53-56).

It also exacted its price. The fundamental democratic value of the dignity of the person has not fared well under authoritarian fragmented work conditions, nor has the democratic aspiration to participate in decisions affecting one's life. Ties with community, based on the principle that people need each other, have been weakened under the emphasis of self-centered individualism. Callous damage has been done to the environment.

We have created a society of powerful means and material plenty but with ambiguity about ends. Should we give clear priority to the individual pursuit of gain, on the assumption that all other goods flow from it? Or, should that pursuit of gain be made subordinate to the values of a more humane community?

Sources of Changes: The Global Market and High Technology

The global market. For a quarter of a century after World War II American industry was the dominant giant of the world scene. While we complacently took for granted our position of eminence, new forces of underlying change were at work. American enterprise was to be challenged not only at the international level but in the huge home market as well.

Robert Reich in The Next American Frontier (1983) caught the essence of one major challenge to complacency. He pointed out that at the opening of the century we had been economic pioneers. We had perfected mass production techniques which could use ill-educated, rural, or immigrant labor guided by Taylorist scientific management. Non-union labor, de-skilled by assembly-line technology, provided low-cost production. But our pre-eminence was not guaranteed by history. Twenty-five years after "unconditional surrender" by Japan in 1945 our enemies as well as our wounded allies had marshalled their own productive forces. They were joined by third world countries using our own type of mass production, and energized by modern equipment and drastically lower labor costs. After the oil crisis and the higher dollar we suddenly found ourselves on the waves of the one global market with everyone else. We were under stress both at home and abroad. We were, in fact, confronted by what Reich had labelled "the next American frontier." According to Reich we had to learn to pioneer again, but this time in a work world of high technology marked by rapid and unpredictable change. The classical scientific management style, Reich said, was cutting us off from a major source of strength: our massive, better educated work force (75% having completed secondary education or beyond). The need to meet the challenges of complex change with flexible, intelligent responses by people at work was wasted by the technical control mode of management. We could, Reich said, be confidently competitive in the global market only if we found a formula to bring together rapidly advancing technology with a committed, engaged work force.

The gist of Robert Reich's argument can be seen more clearly as we look at the impact of high technology on work.

High technology and the nature of work. Computer technology is the engine driving change. It forces us to confront both the fact of few kinds of work, and the need to choose which values will guide its design.

The much heralded shift from smokestack industries to the service sector is demonstrated by a few illustrative statistics. American manufacturing now employs only 19% of the work force (Shanahan, 1985, p. F4). From 1970 to 1983 production workers in steel were reduced from a half million to 258,000. "Information workers" alone--managers, clerks, and sales, technical, and professional people--comprise 53% of the labor force (Skills, Schools, and Technology, 1985, p. 2). In addition to structural changes of such staggering proportions, the microelectronics revolution is leading to dramatic changes in the way work is done, whether in manufacturing or the services.

An example of the rate of change is exemplified in the use of robotics. In 1970 there were only about 200 robots in all of America's factories, with the leader being General Motors. By 1980 G.M. alone had installed 300, and the robots carried a message far beyond their numbers. Between 1970 and 1980 G.M.'s wage bill soared by 240%, while the cost of operating a robot had stabilized at $5 or $6 an hour. The result: 5,000 robots operating in G.M. plants by 1985, with plans to buy an additional 15,000 or more by 1990 (Draper, 1985, pp. 46-49).

The greatest advance in the use of robots is shifting now to the electronics industry itself. For example, about nine-tenths of Apple's MacIntosh computer is assembled automatically.

Within buffeted manufacturing itself a still more ambitious concept is emerging: "computer integrated manufacturing" that can fuse product manufacture and marketing into a single stream of information. For example at McDonnell Douglas Corporation, the sales people can send an order for a part directly to a computer-aided design system. This dispenses with the services of the old-fashioned draftsmen. An engineer can now make a freehand sketch on a cathode ray tube linked to a computer that automatically transforms it into an electronic blueprint which can be revised endlessly. The part can be made "automatically" by computer controlled machine tools similar, in essence, to robots. Other computers update the inventory and keep sales records. Meanwhile upper management has access to whatever information it wants (Skills, Schools, and Technology, 1985, pp. 2-3).

We can get another glimpse of the impact of computers on work by turning to the service sector. Since nearly half of Americans work in offices, a look at the insurance industry is instructive. It is on the cutting edge of exploiting the capabilities of computers and information technologies. Stanford's Institute for Research on Educational Finance and Governance (I.F.G.) made a study of a representative group of insurance companies which showed that, on the one hand, routine clerical jobs such as keyboarding, typing, and filing, often held by minorities, are fast disappearing. On the other hand, new jobs for skilled clerical workers now contain tasks that formerly were the work of lower-level professionals. Many aspects of underwriting and claims estimation have been automated. The study concluded that,

> **Office automation wiped out thousands of jobs for low-skilled clerical workers, created new jobs for skilled clerical workers and eliminated many professional jobs that comprised the middle of the career ladder by which clerical workers move into better paying, more highly skilled and prestigious jobs. . . . Both the bottom and the middle of the occupational**

> distribution are shrinking in the insurance industry. (Levin & Rumberger, 1983, p. 2)

At the same time the requisite skill level for upper, managerial, and professional jobs is rising. A college degree is an entry requirement for such positions where the work is challenging and financial remunerations are proportionately higher.

What are we to make of such dramatic changes? What overall consequences are in store for American workers and education? Will high-tech raise the skill level of work, or extend the de-skilling of work into middle level technical and managerial levels? Will it create more jobs than are lost? The generalization is that we don't really know. It will do some of all of the above. We are confronted with turbulent change, i.e., change that is rapid and unpredictable. Who could have projected the ramifications for American life when Henry Ford got the gleam in his eye for a mass-produced horseless carriage?

In spite of the uncertainties, national reports on education have made two questionable assumptions: that as low-skilled manufacturing jobs are eliminated, they will be replaced by high technology jobs requiring greater technical or professional skills such as computer programmers and engineers, and that high technology will upgrade existing jobs.

The IFG studies of the real world of work, however, point to a more complex and less rosy picture. They find that while many higher skill jobs are, in fact, being created, most new jobs will not be in high technology occupations. For example, Bureau of Labor Standards (B.L.S.) projections for 1978-1990 show that three of the fastest growing occupations are for machine mechanics, computer operators, and systems analysts--jobs which do indeed deal with high technology products. Such jobs are projected to increase by over 100%. But these percentage figures are misleading. Slower growing occupations with a large employment base will contribute markedly more new jobs. The five occupations predicted to produce the most new jobs are all in low-skilled areas: janitors, nurses aides, sales clerks, cashiers, waiters, and waitresses. Only three or four of the "top 20" require education beyond the secondary level, and only two (teaching and nursing) require a college degree (Levin & Rumberger, 1983, p. 2).

As technology becomes more sophisticated it will be able to perform more complex mental functions which will affect technical and professional jobs as we saw in the case of the insurance industry. Thus, while the prospect of a high technology society clearly contains exciting affects, it also has more somber possibilities.

Prospects for a dual economy. One of these is a drift towards a dual economy, both within the society at large and within specific industries. At one end, many at the technical/professional/managerial levels will find satisfying challenges, ample financial rewards and perhaps more leisure, while at the other end, there is the disturbing possibility of a growing underclass. It will often be composed of people of color who have been squeezed out of both blue-collar and service-sector jobs, and who failed to respond to the press for academic performance in the schools. It is fair to ask what will be the social cost if we let their destiny be decided by the simple law of supply and demand. There also are signs of dualism within the workworld itself. In places like "Silicon Valley" in California, we find engineers and other highly trained personnel in computer industries who work in inter-disciplinary collaborative task-forces--while minority women who produce the silicon chips work in low-wage, monotonous, unhealthy work conditions.

If we relinquish the romantic faith that expansion of computer technology contains automatic solutions to employment problems, we see that we are confronted with both practical and moral problems.

The Congressional Office of Technology Assessment (O.T.A.) in Technology and the American Economic Transition (1986) describes a fundamental policy choice we face in the design of technology/worker relations--a choice that could increase or decrease dualism in American work. The O.T.A. says that the combination of microelectronic robotics and telecommunications technology provides an opportunity to revitalize the competitiveness of American industry. But benefits will not come automatically. One option is to maximize profits by turning to cheap third-world, off-shore labor for much industrial production. Then with domestic, non-union workers disciplined by fear of unemployment, management may design technology to de-skill work to maximize efficiency. It may "work" but it increases the gap between technical-managerial elites and a growing body of de-skilled workers. It also produces high levels of unemployment, and wholesale abandonment of some communities. The second option is to use electronic technology to redesign production toward an economy of high-tech, high-skilled, high-wage industries. This choice is based on the assumption that flexibility of response by both technical components and a committed work force with high morale is indispensable for survival in a computerized, competitive era.

The O.T.A. reports that its studies show that the integration of programmable, automated processes from marketing, to work design, to shipment and customer service can produce continuing advantage in international markets. But technology alone will not produce competitive advantage. It must be accompanied by changes in the organizational structure and uses of the work force.

The Value Choices

The core question is what values corporate and union leadership will use to guide the design of work in the emerging electronics era. Hackman and Oldham, in Work Design (1980), found deep division among corporate leaders regarding philosophies of management. This led them to project two scenarios for the near future of work in the United States.

Scenario #1 is where the emphasis is on "fitting people to jobs" by technological and behavioral engineering. It is a sophisticated extension of scientific management in the Frederick Taylor tradition. In this scenario, techniques for engineering tasks into minute trainable steps will create more and more "people proof" jobs. External controls will be used to shape desired behaviors with financial rewards for correcting performance. Psychological tests will facilitate closer fit between people and work tasks. Integrated circuit microprocessors will facilitate gathering performance data that presently defy cost-efficient measurements. Worker productivity will be supervised by micro-second electronic monitoring. Experts who think about the design of production will be separated sharply from people who do the work. In this scenario, in spite of generous material rewards for desired behavior, self-esteem levels will tend to drop and symptoms of alienation will increase. Statements will be heard like, "The harder I work, the more pay and praise I get and the more headaches I get."

We continue to move strongly toward Scenario #1. We know how to operate it. Workers and managers have internalized its ways and are uncomfortable with change. But there are doubts. In 1980 a General Motors Vice President in charge of new plant design told me:

> **In our history we designed work so that every task on the line could be learned in fifteen minutes or less--so simple that any idiot could do it. When trouble occurred we stepped up supervision. We have finally concluded, however, that increased control by supervisors of a reluctant work force that produces shabby products, is not viable for survival.**

Counterforces have developed from a sense that the costs of Scenario #1 are too high--that it is dysfunctional for survival.

For several decades there have been stirrings for reform, from rather superficial efforts like flex-time and job enrichment to a more thorough conceptualizing of an alternative theory of work. First I will present a sketch of a Senario #2 as set forth by Hackman and Oldham and then a more detailed look at the emerging theory of democratic socio-technical work design.

In Scenario #2, the aim is "to fit jobs to people." As often as possible, responsibility for ways of planning and executing work will be located at the level where the work is done. Those who do the work will have a voice in the technical design; they will be included in problem solving and in quality control of their efforts. As more initiative is shifted to persons at the work site, organizations will be leaner with fewer hierarchical levels of management. Information required to do the work will be given directly to the people at work. Deliberate efforts will be made to break with the Taylorist tradition which separated thinking from execution. The question will be asked, how can work be organized so as to treat people as adults and responsible members of the workplace community? There will be a relinquishing of the assumption that there are single expert-designed answers for getting work done. Initiatives, when possible, will be shifted to individuals or autonomous work groups. Organizations will be designed to be places where people can learn and grow because it is necessary for adaptation to turbulent change, and because the need to continue to learn is strong in many or most people.

Democratic socio-technical (or quality of work life) theory of work. Democratic socio-technical work theory is a term that captures the idea behind Scenario #2. The clarification of this philosophy of work has been an international process. Ideas have come from people like Einar Thorsrud and P. G. Herbst of Norway, Fred Emery of Australia, Eric Trist and Michael Maccoby of the United States, and thinkers at the Tavistock Institute of Human Relations in

England.

The basic criticism of scientific management by socio-technical theorists is that it is guilty of the "technological fix" error, i.e., the assumption that all problems will yield to expert-designed technical solutions (Wirth, 1983). The reality of human work, they say, is "socio" as well as "technical." "Socio" refers to the purposive, collaborative, idea-generating aspects of human beings. The mainline efficiency model is out of touch with the "socio" dimension. The system falters because it fails to engage the commitment and personal enthusiasm of people and their capacity for learning and problem solving.

In emerging post-industrialism the fundamental problem becomes how to cope with turbulent change which is the product of human thought and action. Efforts to solve turbulent-type problems with procedures based on principles of the industrial era mechanistic, aggregate model increasingly break down. The capacity to deal successfully with the reality of turbulent change depends on building a learning, value-choosing capacity into the system itself.

The shift from the old to a new model of effective productivity requires also a shift in our image of human nature. Stated as metaphor, Ernest Becker in The Structure of Evil caught the underlying issue. It involves, he said, a shift from La Mettrie's eighteenth century rationalist image of humans as l'homme machine, to the image of homo poeta--the human as meaning maker. We create "structures of evil," says Becker, whenever we design institutions that prevent people from "staging the world so that they can act in it creatively" (1978, p. 172).

Hard-headed men of management and labor are unlikely to be convinced by such poetic abstrations. The truth is, however, that there is undeniable movement in the direction of "horizontal-participative" management. There is convincing empirical evidence that it works.

Studies over the last ten years of a wide variety of worker participation arrangements, from "shop floor democracy" to worker-owned and managed firms, clearly show a positive relation between the extent of worker participation and the productivity of the firm. As an example, Zilog, Inc., a major manufacturer of silicon chips, introduced a study of productivity and quality control. It found that a plant organized by work teams making decisions by consensus reduced the cost of "rework" and raised yields by 25 percent compared to traditionally managed plants (Levin, 1984, pp. 10-13). There is also the plan for producing Saturn, "the car of the future," by General Motors. Behind the public relations rhetoric there is a goal to lay the groundwork for combining robotics with a new style of human relations. The agreements worked out with the U.A.W. change the status of assembly-line workers from hourly laborers to salaried employees. Union workers are to be involved in decision-making processes that formerly were the sole prerogative of management. Workers in production work units of 6 to 15 are to have responsibilities for relevant workplace decisions and quality control. This work style is to be combined with "computer integrated manufacturing" (Holusha, 1985, p. E5).

Irving Bluestone, a U.A.W. vice-president, spoke bluntly to a group of G.M. executives about changes in the years ahead. The bedrock issue, he said, is whether the democratic values of American society will be taken seriously in corporate life. Bluestone accepted that most corporations are a long way from accepting the larger implications of democratic worker involvement. There is little sentiment, for example, to follow the Europeans in providing union representation on Boards of Directors. But he added,

> We know that decisions relative to where the product will be produced, even your accounting procedures, your marketing analysis, all have an impact on worker security. At some point down the road, you may as well face it, workers are going to be saying, "Look, those decisions are important to us and, therefore, we want to have input. . . ." I think at some point in time, the wisdom of seeing to it that this mutuality of concern is shared with the worker will be recognized. . . . Let me say that improving the quality of life is not a sometime thing. It is not a concept which lives only in periods of recession or depression or uncertainty, but it should be embraced simply because it is the right thing to do. It is the moral, human way to treat people. It proves to be of advantage to everybody. (Wirth, 1983, pp. 59-60)

And D. L. Landen (1980), G.M. vice-president for research and development, said:

> I don't believe our authoritarian corporations can continue to coexist with democratic institutions in a democratic society, and the reverse is true, too. In Poland, I can't imagine that a free labor movement will continue to exist in their authoritarian society. . . . Either the Polish government will change as their labor movement becomes more democratic, or the unions will be crushed. In this country, we must democratize our corporations.

In the mid 80's the issue of which route American industry will travel is moot. Our habits push us toward Scenario #1. On the other hand, there are those who see that our deeper self-interest lies with Scenario #2. It is likely that we have entered a period of prolonged irresolution--with the issue very much in doubt. Since the dominant institution of "a business civilization" is business, the schools cannot avoid being affected. In the past decade and a half they have been strongly influenced by systems-efficiency ideology. When corporate philosophy begins to be of two minds they will be influenced by that, too. There is evidence that that is already happening.

Policy Issues for Schools

There is no doubt about the powerful influence on schools of the Scenario #1 efficiency model. By the mid 80's, however, it could not be denied that the Scenario #2, "democratic work place" idea, was beginning to assert its own influence on educational thinking. To illustrate we note first, developments in vocational education, and secondly, recommendations for general education from the Committee for Economic Development.

Alternative philosophies of work and vocational education. Frank Pratzner, senior researcher at the National Center for Research in Vocational Education at the Ohio State University, in 1985 argued that the time was ripe for "a new paradigm in vocational education" (pp. 6-19). The impetus for change, he said, was the combination of high technology and quality of work life development to improve the international competitiveness of American industry. He compared features of the current model with the paradigm needed to replace it. The established model, with roots in the early 1900's, assumes that the content of vocational studies should be derived from analysis of the needs of industry. Training aims to provide entry-level skills for specialized jobs. Performance based curricula, norm referenced testing and grading, individualized instruction, and involvement of business and labor in planning, operating, and evaluating programs are common features.

The alternative paradigm, he said, instead of stressing the learning of specialized occupational skills should focus on development of sociotechnical literacy. Sociotechnical literacy emphasizes a balanced concern for the social-human aspects of work, as well as the technological dimensions, and an appreciation of their interactions. It includes development of basic skills, but also, (a) higher order transferable skills, such as interpersonal and group process skills, problem solving and decision making, planning, and communication; and (b) skills in the organization and management of production (e.g., skills in business, economics, business operation, and statistical quality control). It also includes an understanding of the philosophical underpinnings and consequences of the shift from a mechanistic, technological, scientific management perspective of work to a high worker involvement, participative management perspective.

Evidence that this is not a private dream of Frank Pratzner may be found in Public Law 98524 (Carl D. Perkins Vocational Education Act) enacted October 19, 1984. It states that the purpose of vocational studies is to develop higher quality workers (a) who are responsible and flexible enough to take an active role in the design and productivity of their work places, and (b) who will develop entrepreneurial skills useful in reviving and maintaining the overall development of their communities.

States are required to establish that their programs contain provisions like the following:

> (1) to provide study and training in a vocational setting in order to give students an understanding of all aspects of the industry they plan to enter. For example, a student involved in a housing rehabilitation project is required to learn not just carpentry, but all about the business, from planning, to financing, to labor and community relationships;
>
> (2) to enhance basic and problem-solving transferable skills to cope with technological change; and
>
> (3) to expand vocational-agriculture type projects in which students, for example, plan for a crop and deal with unpredictable problems that occur from its planting to marketing.

The law commends student involvement in economic needs assessments which foster school-community ties: projects in which students use social studies concepts to identify community needs and economically viable responses. It cites commendable examples ranging from day care centers, to a town newspaper, to a wood-finishing business, to swine production.

These references to current forces at work in vocational education establish that Scenario #2 work changes are advanced enough so that they cannot be ignored. This does not mean that the issue in work has been settled in favor of participative management patterns. There is, in fact, a serious challenge for vocational educators who confront a world of industry divided by two different images of the effective work place. Evidence that the nature of the two images is being clarified is provided in Table I--Current and Emerging Paradigms of Vocational Education.

Vocational educators must be attuned to events in industry. They do not pioneer in new educational directions unless something is going on to warrant it. Pratzner's 1985 statement was followed in that same year by Investing in Our Children: Business and the Public Schools--a policy statement report by the Research and Policy Section of the Committee for Economic Development (C.E.D.). This statement was directed not at vocational education but at the reform of general education in the public schools. The motivation, once again, grew out of industry's concern about what is needed to survive and prosper in global market competition.

Corporate revisionism and school policies. The co-directors of the report, Denis P. Doyle and Marsha Levine of the conservative American Enterprise Institute, expect wide influence from the report. The 200 members are drawn from the highest ranks of American business and industry. The project on education followed a major C.E.D. study of American economic productivity, which came to the conclusion that, "economic productivity and the quality of education cannot be separated. Particularly in the modern world, education and economic performance are inseparable." Their studies of Asian and European competitors demonstrated to the C.E.D. "that human resources are more important than physical ones. And a well-educated work force, with habits of collaboration and cooperation as well as competition, is the most important asset a nation can possess" (Doyle and Levine, 1985, p. 114).

Investing in Our Schools (1985) provides an opportunity to see how American schools are viewed when seen through the lenses of top corporate leaders. The influence of Scenario #2 type thinking is clearly evident, but the perspective of the older business tradition is far from absent. We must settle for a limited sampling of the perspective from "the top of the top."

The endorsers of this report are corporate leaders of industries being transformed by the rush of computerized technologies. They are forthright in declaring that a work force educated simply by "old school basics" will not be equipped for meeting challenges of turbulent change.

Investing in Our Children presents the case of Proctor and Gamble as prototype of how significantly the nature of work is changing in America. In

Table 1
Current and Emerging Paradigms of Vocational Education

Components of A Paradigm	Vocational Education	
	Current Paradigm	Emerging, Alternative Paradigm
An Image of the Subject Matter	- Entry-level skill development for specialized jobs - Content/subject area - Serves the interest of employers/jobs/society	- Alternative instructional approach to learning - Process - Serves education and development needs of students
Beliefs in Particular Theories and and Models	- Job analysis - Scientific method - Behavior modification - Teachers impart knowledge - Learning as product/emphasis on content - Acquiring "right" information once and for all	- Cooperative learning - Socratic questioning - Learning how to learn - What is "known" may change - Encourages autonomy - Supports general education development of learner
Values	- Job placement/earnings - Employer satisfaction - Inculcate specialized skills for specific roles - Alternative track for academically less-able/less willing	- Individual performance in terms of potential - Egalitarian/democratic - Students assume responsibility for own learning - Achievement plus employment - Alternative approach to learning for all students
Methods and Instruments	- Lockstep progress - Norm-referenced grading/testing - Rigid, prescribed curricula - Traditional occupation service areas - Business/industry involvement	- Criterion-reference grading/testing - Cooperative/group learning - Divergent thinking encouraged - Electives - Focus on transferable skills
Examplars	- Most secondary and postsecondary programs, to varying degrees	- Some graduate-level programs - Some industrial arts/career education programs - Some career guidance programs
Social Matrices	- AVA divisions, convention, journal; student vocational clubs; federal legislation; state department of vocational education	- Informal networks; Paidea Proposal; Society for Humanistic Education; AERA SIGS on School Effectiveness and Wholistic Education

Note. From "The Vocational Education Paradigm: Adjustment, Replacement, or Extinction" by Frank C. Pratzner, 1985, Journal of Industrial Teacher Education, 22, p. 5.

the past, workers joined Proctor and Gamble to enter low-skilled tasks in narrowly defined jobs--which changed little during a person's work life. The strong trend now is toward participative work systems. Employees perform a broad range of tasks including operating and maintaining equipment and performing their own quality controls. They participate in activities such as goal setting and budgeting, formerly reserved strictly for management. Increasingly work is centered around self-directed teams where problem solving and decision making are important parts of the job. The company provides re-training in the higher level skills needed to meet the flow of change. Training is effective only if employees have strong literacy and number skills, and above all the ability to learn (Investing in Our Schools, 1985).

High-tech firms, Doyle and Levine say, are not served well by old organizational forms. Centralized rigid bureaucracies, in schools or industry, are hostile to needed creativity. They stifle it because their goal is to keep control in the hands of centralized authority. The essential obligation of organizations in the new era is "to nurture creativity." Schools, and previous national reports on schools, have neglected this fact. School policy makers must learn the lesson of industry--to decentralize decision making to the lowest possible level: "solve the problem where it exists...." Give employees a stake in the system by letting them exercise their own creativity and energy in the work at hand.

More specifically the report recommends a "bottom-up" policy for school reform. Focus is on the individual school as the key place for meaningful improvements in quality and productivity. The role of the states, they say, is to set clear goals and high standards, then give the schools the maximum freedom to implement them (Investing in Our Schools, 1985).

The interaction of teachers, students, and administrators in individual schools becomes the key arena for action. The report assumes that the able, sensitive, highly professional school people now needed will not choose teaching, nor choose to remain in it, if they are stifled by present bureaucratic regimentation, or shackled with "teacher-proof" materials.

Teachers as creative actors will respond only if their professional roles are enhanced by maximizing opportunities to exercise judgment, make decisions, and re-shape their own working environment. Furthermore, teachers may be surprised, say Doyle and Levine, that contrary to narrow "back to basics" emphases of recent years, Investing in Our Children calls for liberal education for all: for higher order learning--to think critically and analytically, to cooperate and communicate as well as to compete, to solve problems, to assume responsibility, and to learn to learn. They advocate strengthening "teacher centers" where peers can exchange ideas on strategies for advancing learning, and for changing "the culture of the school" (Doyle & Levine, 1985, p. 117).

This hasty sketch simply illustrates that major corporate leaders now assume that Scenario #2 is the way of the future. I must forego extended commentary on the report. I do make criticisms in my longer paper. For example, the authors are shocked to find that 46% of Black and 38% of Hispanic children live in poverty (1984)--and that these children have the highest rate of school failure. Instead of seeing this as a complex social problem of an emerging underclass, they blandly assume it will lend itself to "school fix" *solutions: beefed-up* early childhood programs for "children at risk" (i.e., poor children) and tougher academic studies. They ignore research which shows the real world dearth of high-tech jobs, and seem to assume that Proctor and Gamble-type jobs await ghetto youth who study hard to get their scores up in mathematics and science.

Even within the sections on democratic decentralizing one still finds the tendency to approach school learning with "the production function" image. Various corporate divisions and units within divisions, they say, are given a great deal of autonomy on how they organize themselves as long as they meet corporate directives--"decentralization works because the results can be measured" (Doyle & Levine, 1985, p. 117). While verbalizing that schools are not the same as industry, they insist that outcomes of schooling can and must be measured. States should look to output measures rather than to process requirements to hold schools accountable.

The problem with such statements is not that they are devoid of good intentions, but that they slip into the mistaken idea that the productivity of measurable units of production in industry is analogous to measurable units of learning in schools. They ignore the fact, as John Goodlad (1979) put it, that there simply does not exist a science of education sufficient to give credence to the "scientism" necessary for these quantifiable accountability models. We don't get such a "science" by simply saying we must have one. The complexities of human learning are not the same as or even analogous to the complexities of industrial production. By supporting reductionist approaches to learning, those more humane qualities the authors seek in decentralization may be vitiated.

Where "quality of life" is concerned, there is another feature of the report that warrants a second look. The report repeatedly asks for higher-level learnings such as problem solving, reasoning, learning how to learn, and learning how to adapt to change. These words, in the holiest of holy category of educators' vocabulary, would appear to deserve a salaam. But the substance of what should be "problem-solved" remains vague. The leaning is toward rational thinking skills that would be useful for solving technical problems at the work site, supplemented by communications skills to improve teamwork. These are laudable goals and on the face of it represent important advances beyond Taylorism. But as the media remind us, the quality of life in America is affected by business activity unmentioned in the report. To be blunt, corporate behavior, as Time put it, also has led to the poisoning of America--to the dumping in third world countries of products judged unsafe for U.S. citizens, and to the abrupt closing of plants that decimate factory communities.

There are, indeed, differences between technical problems and quality of life problems. Comments by E. F. Schumacher in Small Is Beautiful: Economics As If People Mattered (1973) are useful in clarifying the differences. There are, in his account, convergent type problems which lend themselves to solutions by abstract logical reasoning. These are the well-structured problems usually found in school critical-thinking programs, or in courses in mathematics, physics, and chemistry. Such skills are enormously useful for solutions of technical/scientific problems. The C.E.D. report clearly supports strengthening their place in school curricula.

But there is a dearth of reference to the other category Schumacher identified as divergent problems: the type which do not lend themselves to neat solutions of logical thought. Divergent problems are the type people are divided over in politics, economics, education, and family life. They involve the imprecise requirements of weighing conflicts of values, and how to reconcile opposites. For example, weighing the pros and cons of smallness vs. bigness, or struggling to find a tensional balance between the claims of freedom and authority. Divergent problems require lived answers that come from the struggle of involved persons. They might include a questioning of taken-for-granted corporate policies regarding locus of power and societal consequences of production. We heard Irving Bluestone of the U.A.W. address such an issue when he told G.M. management that corporate areas now reserved for management were eventually going to be challenged by American unions.

We cannot be serious about quality of life issues if we avoid thorny problems concerning value choices and power shifts, yet the C.E.D. report largely ignored them.

Work and Education for a Sustainable Planet

The argument that it is urgent to include thinking about quality of life choices in work and schools is forcefully made in the Worldwatch Institute's Report on Progress Toward a Sustainable Society: State of the World 1985 (Brown & Wolf, 1985, chapter 6). Its summary conclusion is that both natural and human life-systems are under increasingly severe ecological stress. The source of stress comes from several extraordinary areas of growth:

(1) Population growth: the world's population, increasing by 81 million in 1984, has now reached 5 billion. (This compares with 1 billion 600 million in 1900, and 2 billion 500 million in 1950).

(2) Economic growth: since 1950 the world's output of goods and services has nearly quadrupled to an annual $12 trillion.

These levels of growth are a testimony to human energy and achievement. But we are just beginning to perceive the damage accruing to interconnected life-systems.

Worldwatch maintains that the years ahead are likely to be traumatic, and could be catastrophic. Nothing less is required than whole new orientations to the way economic and social policies relate to deteriorating life systems. The key is broad-based political and educational processes that involve people from all walks of life. Actions of technical elites of themselves cannot coerce uninformed and uninvolved populations. What is required is inventive grass roots leadership at local levels together with enlightened leadership at national and global levels.

This cannot be secured without engaging people in personally involved learning. Narrow information accumulation that still prevails in the world's classrooms and in passive de-skilled work situations won't do. What is needed is *contextual learning--learning that assists people in seeing the interconnectedness* of events and policies; in John Dewey's terms, learning that helps people reconstruct their experiences so that they see new meanings about themselves and their world; learning which helps people examine social and institutional practices in terms of whether they are destructive or conserving of life systems. It requires inclusion of reflective ethical judgments.

This kind of learning cannot be left to formal education alone. It must be incorporated into the world of work itself. No one should underestimate the level of difficulty involved.

Denis Goulet, in weighing the impact of technology of global problems, in The Uncertain Promise (1977), says that we need to face the fact that the exclusion of "quality of life" values has simply been built into the profit-maximizing, efficiency calculations of the Western socio-economic system.

According to Goulet, a fundamental question for life in a high technology era is what concept of efficiency we will choose: Western "engineering-type efficiency," or a new type of "integral efficiency." Engineering-type efficiency is the kind employed in closed circuit mechanical systems in which ratios of work done is compared to energy supplied to it. Efficiency is determined by quantifiable measures of inputs to outputs. "Quality of life" dimensions fall outside the system of calculations as "externalities." This type of efficiency has become dysfunctional in terms of human well-being. It is so deeply engrained in Western thought, however, that it will be extremely difficult to change. The urgent need now, says Goulet, is to create:

> new modes of operating efficiently, simultaneously solving problems in the conventional style, and optimizing social values hitherto externalized but now needing to be internalized. . . . Managers and designers of technology will need to explore ways of becoming integrally efficient, that is, of producing efficiently while optimizing social and human values. This they must do with as much passion, single-mindedness, and practical sense as they now devote to making profits or creating new products. (pp. 18-19)

From the perspective of Worldwatch and Denis Goulet, it is clear that the appearance of a democratic socio-technical philosophy of work is arriving at a propitious time. When people have an opportunity to raise questions about the quality of their life at work it introduces the habit of raising questions about quality as well as quantity. But to limit such questions to the work place is clearly inadequate. As Eric Trist and Fred Emery argue in Towards a Social Ecology (1973), democratic work design must be seen as only a first step--a "leading edge" towards the principle that productive development in an interdependent world depends on policies that promote the well-being of all in the system. Increasingly the significant system is seen to be global, as witnessed by economists who view the international market as the one of primary significance. In addition to becoming able to compete, we eventually will need to see that an international economy in which per capita income ranges from $280 per annum in some southern hemisphere countries to $11,000 in some northern countries has an inherent instability which endangers the welfare of the whole. The point becomes even clearer when we note that in 1984 $647 billion went for world-wide military expenditures and only $39 billion for world-wide development assistance. (Report of the Twentieth United Nations of the Next Decade Conference, 1985, p. 7).

Even more basic than the question of "how to work" is the question of "what work to do." The barest beginnings have been made in raising questions about "what will be produced."

Under fear of economic survival both labor and management have shied away from the troublesome question of whether they are engaged in socially useful or harmful work. An exception was the action of the Combine Shop Stewards Committee of Lucas Aerospace Industries in England. When confronted with layoffs in a technologically advanced corporation the unions raised a new order of questions. They identified the paramount contradiction of our time as the growing gap between what technology could provide for society and what it actually does provide. They demanded that the advanced technology and human skills of Lucas plants be employed to produce a long list of socially useful products which they identified. They asserted that they had the right to be engaged in socially useful work (Cooley, 1981; Wirth, 1983).

We may hope that such isolated actions, combined with the more general awareness of the need for workplace reform, may be beginning steps towards creation of a new business paradigm: a paradigm complete with values and ethics consistent with demands for a just and healthy society. We can already identify companies that are moving to incorporate economic, environmental, and social concerns in corporate decision-making. Such an example is Wang Laboratories, Inc., the second largest producer of office automation systems. Wang offers self-improvement programs for employees, provides free day care, makes substantial donations to cultural and community development in the Boston area, and is an aggressive equal opportunity employer. Wang recently built a $15 million factory in Boston's inner city and takes the lead in locating high-tech factories in high-risk economically depressed areas (Dowie & Brown, 1985). The groundwork is being laid for creating corporate cultures capable of considering the broader Worldwatch type issues. The basic goal is to return to the early nineteenth century American tradition that incorporation is a concession of public authority to a private group *in return* for service to the public good. Management then becomes accountable not only for technical competence but also for meeting standards of public obligation (Bellah et al., 1985).

If the goal is a sustainable planet, neither workplaces nor schools can do it alone. Schools, of themselves, do not have the power for social reform that the early progressives assumed. In a business civilization they cannot avoid being affected by values of the corporate work culture. Potentially, though, they find themselves in a new situation in which the Taylorist efficiency tradition is challenged within corporate life itself. The role of teachers is not the same as workers in industry, but schools are workplaces for the young and adults who do their daily stint there. Educators may want to take a pro-active role in exploring the meaning of democratic socio-technical philosophy for their own workplaces. They can take advantage of support for such ideas as: creating small participative learning communities, either within large school units, or as autonomous entities; creating administrative leadership that "taps the brains" of everyone in educative settings; creating learning strategies that give priority to distinctive human capacities for individual and group inquiry and problem solving, and nurturing personal creativity and enthusiasms (remembering that enthusiasm comes from the Greek en-theos--the personal God within).

With regard to the technical dimension, educators can focus on how computer assisted instruction can be used not only to orient students to an electronic work world, but also to advance the thwarted goal of equity. The Office of Technology Assessment (1986) says that judicious use of computer technology may help secure a more equitable distribution of learning for students with handicaps due to poverty. Research shows that narrow skill information can be learned in one-third less time through computer instruction. This can leave more time for understanding basic concepts, and for individual or collaborative problem solving. The critical issue, however, is what kind of minds and values control the design of software--those committed to supporting effective thinking, or those merely anxious to produce a salable product.

The same issues will apply to the inevitable expansion of recurrent education where responsibilities will fall jointly on industrial training and teaching through formal institutions of learning.

Educators may find support from those "leading edge" sectors of management and labor interested in democratic-inquiry forms of learning. But educators also have an obligation to reverse the usual question asked by industry: Are the schools producing students prepared for corporate work? Educators must insist that an equally relevant question is whether American business and labor leaders are designing places of work worthy of students coming from creative, intellectually stimulating learning settings--for those in lower as well as high paying jobs.

Furthermore, teachers must be prepared to resist rationales of industry, new or old, which interfere with their central educative obligation. Teachers have a primary task that transcends the needs of beleaguered industry. Teachers are carriers of liberal culture--of the liberalizing skills of citizens of a free society; of the skills of verbal and computational literacy; of the skills of critical thinking; of ways of understanding the evolution of values of a democratic culture and the complexities of living in a society of plural and conflicting world views; of ways of weighing policy choices in terms of whether they nurture or are destructive of social well-being; of assessing where we have fulfilled the vision of a just society and where we have failed; of gaining insight into the unique opportunities and dangers in an electronic nuclear era in which humans reach out beyond the planetary home.

To avoid the dualisms in work and education that betray the democratic aspirations of American culture we face a two-fold problem: how to create more work that is personally fulfilling and socially useful and how to educate Americans so that they will struggle to realize such a goal.

Addendum on Vocational Studies

I have argued that we need to move in the direction of Scenario #2 and what Denis Goulet called integral efficiency. Where vocational studies are concerned, the need for the shift is of such urgency that vocational educators should take a proactive role to support the "new work." As I indicated, I see the ideas of Frank Pratzner and aspects of Public Law 98524 as examples of such support within the field of vocational education. Fortunately we live at a time when important leaders in industry and labor see that we need to support Scenario II. This could provide important community support.

I used my allotted space to write about general trends and issues. I probably went that way because I don't know how to fill in the details of a vocational studies program. I'll settle for a sketch with a few broad brush strokes.

1. In the first place I think the argument I have made supports the idea of vocational education as part of general education. Worldwatch, for example, says that the shift in values for a sustainable planet cannot be accomplished by technical experts alone. If, as Max Lerner argued, America should offer to the world qualities of leadership, "attuned at once to the life of nature and the spirit," then the insights and commitments to support such leadership must be taught and learned across the population. Furthermore, if a combination of conceptual-technical competence, combined with a flexible-participative work and learning style is required to make the United States viable in the world economy, then American schooling ought to support such learning.

2. I assume that vocational training, as training of entry level skills for employment, is separate from or ancillary to vocational studies as general education. From my perspective it is useful to accept R. S. Peters' definition of education as "initiation into a worthwhile form of life." David Carson (1985), a vocational theorist from Tasmania, accepts Peters' definition and then argues that those responsible for framing vocational educational learning experiences should ask themselves: "What are the curricular processes that will reveal work as a component of a worthwhile form of life, and which will prepare children for initiation into that work component of a worthwhile form of life?"

Vocational education from this perspective has the same ideal as the general institution of education, i.e., transmitting worthwhile aspects of the culture so that people can be initiated into a meaningful form of life. Work is the aspect of the culture that vocational studies passes on.

3. Vocational educators who see themselves as primarily general educators might move closer to the Deweyan part of the American educational tradition. In his own Laboratory School Dewey made the occupations a central part of the curriculum at both elementary and secondary levels (Wirth, 1980 & 1983). He saw a multifaceted way of studying occupations as providing opportunities to integrate conceptual learning with active, doing experiences which engage the whole person. Study of occupations, Dewey argued, provides opportunities to integrate academic learnings in social studies, science, and mathematics. For example, he said that a study of major historic changes in human techniques for producing the necessities of life would show the evolution of human powers of

thought and technology. Even at the opening of the twentieth century Dewey argued that specific skill training should be a small, ancillary part of a vocational curriculum. Today this makes sense as the rapid obsolescence of training in an era of change calls for a broader, not a narrower, preparation for work. For Dewey, vocational studies should develop intelligence, initiative, ingenuity, executive and collaborative capacities, and the ability to see value choices which support or hinder healthy human growth. He wanted workers to have the knowledge and skills to be masters of their lives and a changing world.

Dewey's concept of good work was close to E. F. Schumacher's more recent view in Small Is Beautiful: Economics As If People Mattered. Schumacher held that the function of "good work" is to give a person a chance "to utilize and develop his faculties; to enable him to overcome his ego-centeredness by joining with others in a common task, and to bring forth the goods and services of a becoming existence," i.e., goods and services that meet the criteria of "permanence, health and beauty" (1973, pp. 89-90).

So students should be led to understand the critical role of work in human life, and should be led into investigations that help them discriminate between good work--and bad.

4. A general theme might center around the idea, "You are going to be twenty-first century American workers. What will you need to know and to do to help American work adjust to turbulent change, and to help yourself personally to adjust to such change?"

Having heard the case for moves toward democratic socio-technical work design, students will see the need for the kind of skills recommended by the Committee for Economic Development (C.E.D.):

- -- The need to learn how to learn.
- -- The necessity of mastering basic skills and how to take personal initiative for continuing improvement through: traditional instruction, use of computer software, and peer teaching, and learning.
- -- Develop higher order problem-solving and reasoning skills--individually and collectively.
- -- Learn how to reach for one's "personal best," and also how to contribute to effective collaboration in group efforts.
- -- Learn how to gain an overall perspective about a corporate or work setting, and about the interconnectedness of the parts.
- -- Develop personal plans for additional skill development, and set personal career goals.
- -- At all levels use tools to acquire computer literacy.

5. Beyond the C.E.D. type recommendations we need studies which show the need for higher order ethical-moral insights and skills, e.g.,

- -- Understand the basic democratic value of human dignity and what it means for the work world and the society.

- -- Understand core democratic values and how they relate to a caring-effective use of human resources.

- -- Understand the tension involved in balancing individual competitiveness against group welfare.

- -- Develop sensitivity to ecological concerns and their relations to corporate policy. Understand the hazards and satisfactions of "whistle-blowing."

- -- Learn the processes and skills of wrestling with value choices.

- -- Be capable of critical evaluation of corporate, institutional, and social policies.

Support for this dimension should come from those leaders in industry who, in Hazel Henderson's words, are beginning to see that, "For the first time in history morality has become pragmatic" (1977, p. 235).

6. There will be a need for models and "hands-on" contacts with "new work" style settings. As examples:

- -- In Stavanger, Norway, I saw a pairing of a secondary vocational school with a manufacturing consortium making robots and bicycles. Some problems of collaborative work teams in the plant were made available to school classes. Students and workers planned remedial actions.

- -- As the Norwegian Merchant Marine adopted socio-technical work policies, instructors from the Marine Academy were given tours on the ships.

- -- In Flint, Michigan, secondary students headed for auto assembly employment were asked as teams to figure out a strategy for front end assembly, then watched work teams at the factory.

7. As we get closer to the work of actual schools a few random ideas occur.

- -- Schools, too, are workplaces. They should model in a variety of ways the values and learning style of "new work." Educators would consider carefully the C.E.D. recommendation that individual schools be given a good deal of autonomy in how to meet general objectives. This could also apply to teaching-learning programs within the schools. Some of the most effective teaching I have seen existed in a middle school where teachers were organized into teams of four teachers, representing science, mathematics, social studies, and language arts. Together with about 100 students they formed small learning communities within the school. Different teams had somewhat different learning styles and strategies. Students and parents could request the one they preferred. Such teams might very well be paired with a vocational studies teacher.

Work might alternate between project activities related to vocational studies and related systematic skill studies.

-- In the early years some schools might experiment with Dewey School type studies of "the occupations." In the Dewey School students studied the nature of production of basic aspects of life in the home. There were gardening and cooking experiences where food was concerned; and carding, weaving, and sewing cotton or wool fabrics where clothing was concerned, etc.

Historical study was done of the basic processes for producing necessities by early humans--and what changes had led to contemporary modes of producing food or clothing.

In New Jersey, I saw a "Technology for Children Project" where children were led to inquire into understanding the gadgets in their homes and neighborhoods. What makes a refrigerator cold? What leads the door to open automatically at Krogers'? I was clocked by a beam of light across the door as I entered the room.

-- At the secondary level I assume there would be more direct contact with people and processes involved in "new work;" and the relations to the broader issues of the world economy and ecological and ethical issues would be introduced.

8. Finally, there is the formidable problem of how to teach vocational studies in a society in transition--where the main-line Scenario #1 tradition is still dominant. The issue is especially keen for those who choose to take a proactive role on the side of Scenario #2.

It is a genuine problem without a magic answer. Several comments:

-- At one level the general knowledge and skills demanded by C.E.D. will have use for a wide variety of work situations.

-- Vocational educators could teach students the truth that both work worlds exist simultaneously. Some will enter jobs that are routine and authoritarian. They can seek to make changes. They can realize that meaningful work can go on in the avocational part of life, and in community involvement.

-- Students can gain meaning in their lives by realizing that the well-being of the planet and the American society depend on moving toward more flexible, caring ways of relating to human and natural resources. There is the opportunity to be part of the solution instead of part of the problem.

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Highlights of Discussion
Following Wirth's Presentation

Helling: The questions I want to raise are, "Is business ready? Is business committed?" You (Wirth) make the point that you'd like to see schools shape society rather than industry driving education. I'm not sure that the demeaning, repetitive drudgery in Scenario I isn't such a part of our society that we may not be able to overcome it. Maybe it's a dream. I heard recently that we're part of the problem in vocational education. We only want to stick our toe in to change, and we hang onto the skills and those things we've been secure in.

Kenney: PPL Industries (Project for Pride in Living) is a nonprofit organization established to provide employment for the so-called hard to employ. Seventy percent of our participants are Native American, the rest are of other racial minority groups.

I'd like to begin by taking on the question, "Is business ready?" I operate my business on Scenario #2 until I want to get the job done. Then I quickly jump back to Scenario I.

I seem to have spent most of my life working with the poor. And the poor maybe are the products of what we oldtimers thought vocational schools were all about. In the last 4 years, I've hired 200 Native Americans. And I would guess that of that 200, 180 would have the intelligence to get through high school, and maybe 100 to get through college. But many of them never finished grade school. Those that did go to high school got vocational training in fields that are of no value to them today. At least 20 of the 200 Native Americans have had welding, but none of them can find a job as a welder. Two of the three black men in my shop right now have gone through drafting school, one is a graduate of a mechanics school, and none of the three can find a job. Part of the reason is that the school, or the parents, or the society never dealt with the whole person.

A Note About These Highlights

This is an excerpted transcription of the discussion following the summary of this paper. We have excerpted what we believe is a representation of the variety and diversity of ideas expressed in the discussion. In some instances we have taken some liberties in order to make sentences complete and to fill in words which are unintelligible on the tape due to coughing, laughter, or other types of sounds which tape recorders seem to adore. Participants have had the opportunity to review the comments presented here.

In many cases, the people in our program are dealing with chemical dependency problems, domestic abuse, child abuse, sexual abuse, and every conceivable kind of problem at home so that the best educator in the world probably wouldn't have been able to get to these people to help them without dealing with those social problems that make it impossible to learn.

Many men with carpentry experience can't even qualify to get into apprenticeship programs. In most cases, we're told, it's because they have no math skills. I hear them saying that the schools are to blame. It seems that they're saying, "The school didn't teach me what I need to know!"

It's amazing to me the number of poor people in this town who have the intelligence, the motivation. They're at a point in their lives where they'd really like to get an education because someone's convinced them that that's the only way they'll make a buck.

Their feel for 'quality of life' is so different from mine. I'm one of 11 children raised by a widow. We were lower-middle class Irish Catholics who fought like hell to stay off welfare and were somehow inner-motivated that we were going to succeed. If you're a Native American, you've been taught you'll never succeed. The poor are so convinced that they can't get out of that cycle of poverty. They don't have the motivating influences that the Kenney kids had to get out of the cycle of poverty. So you can teach them how to weld, cut wood, or put a couple wires together, but unless somebody can give them a belief that it is possible to break out of the cycle of poverty, all the vocational schools in the country will not solve that problem.

What I'm scared of is that we're increasing that group of people geometrically, that as we get more sophisticated in our systems of production, PPL Industries will find that instead of having 500 applicants, we'll have 20,000 applicants. Since our market is labor intensive products, we will not be able to do the work at a low enough rate to compete with the third world work force. We're going to have a huge crowd of people who are totally dependent on the dole in our society unless we can find a way of breaking that cycle of poverty at an earlier age.

Wirth: I relate very much to your comments. I'm out of a factory family background. A couple uncles only finished fourth grade; my father finished seventh grade. One reason that I got interested in the new style of work (sociotechnical) was because I always felt that my relatives were very bright, capable people whose brightness was never recognized in a lot of the jobs that they were in. I always felt that was a terrible waste. I had this feeling that there's a great waste of a lot of people out there.

There is a real danger of a permanent underclass--the large number of minority peoples who can be outside of our society all of their lives. Somehow we have to come up with some response to that.

Henrie: Why do you (Wirth) use the term 'vocational studies' and not 'vocational education'? Are you proposing that vocational studies include more on the concept of work? I haven't heard anything about "task analysis" or "jobs."

Wirth: Why 'vocational studies'? In coming up with this alternative vision, I was really talking about vocationalism as part of general education. It made more sense for me to think of the term 'vocational studies' which made it somewhat separate from 'vocational education'.

I like the term 'socio-technical'. It says that both sides of the hyphen have to be taken with equal seriousness. There's got to be technical competence, but if we concentrate only on that, we get out of touch with the human capacities of people we haven't been using. It would be easier to move in this direction in smaller businesses because bigness poses major problems for us in remaining human. I think smallness is the best sort of condition for some of the things I was trying to focus on. We also have to learn how to create smallness within bigness.

Bishop: The emerging alternative paradigm (Scenario #2) really involves the elimination of vocational education as we know it now. I have a problem with this. Where's the content? What is it we're asking students to learn? I think we need to discuss and get pretty specific about what it is that is the added that we're not already trying to do, and what it is we're going to subtract from the curriculum in order to do it.

Wirth: There ought to be more in school programs for elementary through secondary about the nature of the world of work, the changes that are going on that affect our lives, and what we're going to have to know to be effective.

Copa: The conversation Arthur (Wirth) provoked deals with the issue of, "What is the subject matter of vocational education?" I think it has to do with work and how one thinks about work--whether it's just the technical aspects of it, or work in some global kind of way. I think management faces the same question of Scenario #1 or Scenario #2.

You (Wirth) have given us an interesting out. For me the key line was, "Facing this choice, what should vocational education do about Scenario #1 and Scenario #2?" And you suggested why not teach the truth, that Scenario #1 and Scenario #2 are both operating out there and that that which will prevail hasn't been sorted out yet.

CHAPTER IV

Major Issues in Vocational Education in the Year 2000

Marvin Feldman

Do you remember the good news--bad news--stories? One told of an airline pilot speaking to his passengers on the intercom. "I have good news and bad news," he said. "First the bad news. We are hopelessly lost." "We have no idea where we are or where we are headed and our instruments are not working." "The good news is that we are making excellent time." I believe America's educational effort has lost its way and is failing growing numbers of students for a neglected reason.

There is an unresolved question of the goals of education. For nearly a century, the system has been trying to fly in two directions at the same time. The system has become two systems--the "liberal" and "vocational"--at war with each other for decades. As a result, while both are essential to all students, we are realizing the goals of neither.

Those of us who hoped that this destructive conflict was at least coming to an end and the goals of education reconciled were saddened the year before last as the war broke out again--thinly disguised as a campaign for excellence in education. The report in question was titled--ominously--A Nation At Risk. We were invited to tremble at the spectre of a "rising tide of mediocrity" in education. In what is surely one of history's more excessive metaphors, we were told we had "been committing an act of unthinking, unilateral educational disarmament."

The report, rightly understood, was a declaration of war, all right, not on mediocrity, but on vocational education. And just a dozen years before the Carnegie Commission, after a sustained and searching examination of our educational institutions, had criticized the system for offering too many young people too few alternative options. The system, the commission said, was "too much biased toward academic subjects alone."

Now, a few years later, the excellence commission called noisily for fewer options and a re-emphasis on academic subjects at the expense of vocational ones. No wonder educators are confused, when blue ribbon commissions appointed to clarify issues, succeeded only in obscuring them.

Where did the partisans of the "excellence" go wrong? They missed an essential point. As education has become more universal, as we have sought to make education more accessible to more people, the need to integrate vocational and liberal education has become more urgent. The excellence commission, in effect, was an appeal for the dis-democratization of our educational effort.

It did not go unnoticed. Fred Hechinger, the "dean" of educational journalists at The New York Times, wrote: "Demands for excellence have pushed concern for equity onto the back burner." He quotes Gregory Anrig, President of the Educational Testing Service: "Excellence cannot be allowed to become the new code word for a retreat from equity just when struggles of recent years are beginning to pay off."

Many educators have been trying for years to lay aside these old fictional distinctions between academic and vocational, and which are confusing and crippling our educational effort. They suggest choices which need not be made, divisions in what is really indivisible, and conflicts where none need exist. We should seek the full integration of our thought and practice about education.

We must do two things that we have traditionally assumed to be mutually exclusive. We must make education relevant to the world of work. We have no choice about that. And we must make education more relevant to the achievement of the good life. We have no choice about that either. An elemental new reality has been thrust upon America's educators.

Masses of people are beginning to see life's larger possibilities and a need to pursue them. This has never happened before. It is a new phenomenon. Now most people are aspiring to examine and experience a range of life's possibilities that has before been an option open to no more than a tiny handful. We are entering an era not only of mass influence, but of a mass appetite for participation in culture and creativity.

-- People's search for meaning is becoming a universal search.

-- People's need to create is becoming a universal need.

-- People's desire to participate in re-shaping society is becoming a universal desire.

We have traditionally divided the arts to which we educate people into three separate domains: the practical arts, the liberal arts, and the fine arts. We must abandon the illiberal belief that only a liberal arts education liberates the student. The practical arts and the fine arts also liberate students from enslaving limitation. They do it in different, but equally indispensable ways.

The practical arts are the arts of function. Their mastery liberates people from helpless dependence. The liberal arts are the arts of meaning. They give the student a sense of context and continuity. They liberate students from a sense of isolation and futility. The fine arts are the arts of transcendence. They teach that man can create more than he can comprehend. By developing our sense of mystery, they liberate us from what is merely literal. The American educational tradition originally developed in a way that made these disciplines competitive or--at the very least--that badly blurred their right relationships.

Without assaulting you with a lecture in cultural history, let me suggest what has happened, deliberately oversimplifying an enormously complex set of interacting historical circumstances. Higher education was, originally, frankly elitist. Right up until the American revolution, Harvard students were listed by social rank. In those days, common people were flatly forbidden to "walk in great boots" or otherwise imitate the behavior of their betters. It was a rigidly hierarchical society. But many of our educational traditions and conventions took shape in this earlier, vastly different time.

Society was composed of a handful of aristocrats and a great mass of uneducated and, it was widely assumed--uneducable ordinary people. Jonathan Baldwin Turner put it down bluntly and without apology in the 1880's:

> All civilized society is divided into two distinct . . . classes: a small class whose business it is to teach the true principals of religion, law, medicine, science, art and literature; and a much larger class who are engaged in some form of labor . . .

A privileged, educated few were presumed to be the brains for the society while the presumably less educable became, naturally, the brawn--their efforts directed the wiser elite. Colleges educated this tiny elite destined for the ministry or the professions or for the easy-responsibilities class, and it was, essentially, a liberal education. One learned skills in other ways.

But as the democratic tradition blossomed in the United States as it had blossomed nowhere else in the world before, more and more people aspired to more and more education. And the model was the kind of liberal arts education intended for a tiny minority--many of whom had no need to earn a living. "Do you smoke?" the great lady asks her daughter's suitor in Oscar Wilde's play. When he admits that he does, she says, "Good." "I think every young man should have an occupation of some kind."

But as America democratized, the mark of membership in the new mass aristocracy became a college education originally intended for the indolent or for the professional scholar. In 1900, 200,000 students went to college. Last year, the number was 12,000,000. But a vocationally impractical curriculum simply did not suit the real-world imperatives of working people. This is not to say that liberal education has no part in their education.

I've been haunted by the message of a puzzling, perplexing, heart-rending book called What Went Wrong? by an English craftsman. He's writing about British working people who have achieved all the material ambitions they sought to achieve half a century ago--and who now have no sure sense of purpose. The question has become, "Is there life after work?" or only an emptiness to be filled by passive entertainments, recreational chemicals, and bored indolence.

Technology has conferred a special urgency on all this. We are right now in the middle of a technological revolution that is making the so-called industrial revolution look more and more like a high school hobby show. And technology for all its exciting benefits is the enemy of social continuity--that priceless sense of place and content which makes stability and self-development possible. The literature of social criticism overflows with eloquent expressions of this peril. Listen to George Kennan:

> **Wherever the past ceases to be the great and reliable reference book of human problems, wherever, above all, the experience of the father becomes irrelevant to the trials and searchings of the son, there the foundations of man's inner health and stability begin to crumble, insecurity and panic begin to take over, conduct becomes erratic and aggressive.**

Alexis de Tocqueville, that brilliant young French nobleman, came to America in the 1830's to study our poisons, but in time he wrote Democracy in America, that stunningly perceptive and prophetic description of the meaning of the American experience. But while we are forever enthusiastically quoting Tocqueville, we forget that his prognosis for America was equivocal if not pessimistic. For the first time in human history, Tocqueville wrote in the last chapter of Democracy in America, "The past has ceased to throw its light upon the future; the mind of man wanders in obscurity." And he was writing in 1840.

The American scientific revolution was still to come, creating a nearly absolute discontinuity between one generation and the next. Philosopher J. Glenn Gray said of it, "The scientific revolution has so altered the pattern of our lives that the experience of one generation is no longer very relevant to the next." As a result, our common body of experience and belief has dwindled dangerously. The social glue is coming loose.

This phenomenon is chronicled in a compelling way in a book published last spring called Habits of the Heart. The authors, a group of young sociologists, borrowed the title phrase from Tocqueville who found such hope as he had in an unspoken commitment to community--a habit of the heart--he found in the young republic. Now, the authors find, that commitment has given way to a shallow and self-serving individualism.

In a culture built on separation and specialization, Wendell Berry writes, "The old union of beauty, goodness, and truth is broken." The happiness people long for is private happiness--and that at the level of physical sensation. Life becomes, as Shakespeare wrote, "A tale told by an idiot, full of sound and fury, signifying nothing." Or, as Tocqueville wrote, "Each man is forever thrown back on himself alone, and there is danger that he may be shut up in the solitude of his own heart." Strangers who find themselves alone together in elevators almost always speak of the weather--perhaps because that is the only thing they can be reasonably confident they experience in the same way. Meteorology is becoming our only binding universal.

Organizations are finding it more and more necessary to bring in experts to help co-workers to communicate and to listen to each other. Eva Brann in Paradoxes of Education in a Republic points out that college teachers are finding it harder and harder to find a single book or even a play of Shakespeare that everyone in the class knows. The consequences are hair-raising.

It is a central paradox of the human condition that individuality cannot be developed without a prior experience of community. Without that experience, the individual feels isolated and powerless--alone and helpless--buffeted by large mysterious forces that he or she can neither understand nor control. The individual feels unimportant and insignificant, and easily manipulated by those who understand power. The only possible commitment is to a tiresome search for an image acceptable to others.

Imagine by contrast, the great leverage of an individual linked to interconnecting chains of human cooperation. A single writer, for example, can draw on vast research resources, write a book, distribute it through an infrastructure manned by hundreds of specialists, and conceivably reach an audience of millions. In the same way, an individual linked to an intellectual tradition can find great solace and encouragement. We need not feel isolated and alone. We can escape the desperate feeling of transitory futility. Emerson said we study the classical period in part for the reassuring feeling of an immense longevity. But now this essential continuity has been interrupted.

The authors of Habits of the Heart trace the evolution of the nature of higher education in America. In the nineteenth century, the effort was built on the idea that the purpose of higher learning was to transmit a single, unified cultural heritage. It was widely understood that the task of institutions of higher education was to produce men and women of learning who would have "an uplifting and unifying influence on society." Literature, the arts--even science--were seen simply as specialized parts of a single, integral tradition of learning. A required senior course in moral philosophy, usually taught by the college president, was intended to integrate the various fields of learning and to relate them to the specific business of living a good and generous life.

That comfortable unity was torn asunder by the scientific revolution. As Thomas Haskell has put it, the specialized scientist was obliged to exchange his general citizenship in the whole society for membership in some specialized community of the competent. As in the legend of Babel, we began to speak specialized languages, incomprehensible to those of other specialists.

The scientific revolution altered practical affairs in an equally wrenching way. We had lived in small communities and pursued certain "callings." We suddenly became an industrial-corporate society organized around competing professional careers. Pollsters find that most Americans share two common longings: to work for themselves and to live in a small town. That's simple nostalgia for the way things were in the mid-nineteenth century--before the scientific revolution.

The scientific revolution destroyed the intimate, unquestioned connection between the physical and metaphysical. Urbanization removed us from nature. As goods came to be produced by machines, we could not, as Gray writes, "project ourselves into their nature. We lose our sense of belonging to the world about us." Our relationships to things become abstract. Even our designs begin to suffer:

> the useful and the aesthetic; the formal and the functional; the emotional and the intellectual tend to get separated from each other. And with these separations we cannot penetrate things very far.

And that circumstance, that separation or disjunction of the literal and scientific from the ethical and moral, defines the task of today's educators. We must reunite what has been artificially separated. We must reunite the practical and the theoretical, the utilitarian and the aesthetic, the particular and the general. We must re-integrate the educational enterprise. We must, as Gray says, "provide the essential bulwark against the forces of impersonality, standardization, rootlessness and discontinuity which threaten us today."

John Dewey, in the popular memory's cruel shorthand, is remembered as the apostle of practical education--of "learning by doing." We most remember his disgust at a school where young people were taught to swim without going into the water. But Dewey had a much larger vision--of an education suited to a nation commited to equality, a nation eager to lift the burden of working people through technology and a nation bound together by shared commitments to continuity and community. It was Dewey who pointed out that liberal can mean two things. It can mean free or it can mean generous.

Dewey's vision of a liberal education for working people was of an education generous in spirit. He meant an education that builds a capacity to be part of the experience of others, an eagerness to explore new worlds, a willingness to make intellectual and emotional commitments for their own sake and not because they are practical or profitable in some self-serving way.

The need to somehow harmonize the practical and the metaphysical in education is an ancient concern. "What should be the aim of our training?" Aristotle asked. "The useful in life?" "Virtue?" "Higher knowledge?" "All these opinions have been entertained." But now it is principally expressing itself in the sterile controversy between vocational and liberal educators. And the system, torn between conflicting goals, is failing growing numbers of students.

Educational reform can no longer be seen as a zero-sum game in which the interests of academic educators are antagonistic to those of vocational educators, in which the goals of one can only be achieved at the expense of the goals of the other. Academic and vocational education are not in conflict; each has an importance of its own. They are complementary. It is not a question of either/or; it is a question of both/and. Each serves distinct, different functions which sometimes overlap.

What is to be done? There must be a continuing reformation of American education. There can be no question about that. Clearly, a system fashioned to meet one set of educational requirements for a tiny fraction of the population now needs to meet a new and radically altered set of requirements for virtually the whole population.

Clearly, we need a new definition of excellence--not a warmed-over version of an old one. We need a definition of excellence that will have meaning for everyone. We need a definition of excellence that includes excellent articulation with the known needs of labor markets. We need a definition of excellence that acknowledges both the need for saleable skills and a sense of place and meaning.

We need a definition of excellence that provides both the specific and the general and acknowledges that the road between them is a two-way road. We can move both from the general to the specific and, as vocational educators have been demonstrating for decades, from the specific to the general. We need a definition of excellence which acknowledges that logical-mathematical intelligence is only one of at least seven types of intelligence and that all need cultivation. We need a definition of excellence that will tend to integrate the educational enterprise and not resume the destructive process of fragmentation.

Highlights of Discussion
Following Feldman's Presentation

Peek: Your paper (Feldman's) raises a central question about shared values of our culture. It leaves us with a choice to either replace the work ethic with a vision of an earthly community or it leads to greed and narcicism.

Feldman mentions the Nation at Risk. I think the latest chapter of that struggle indicates that we are shifting back to the comfortable old ways, to competition in order to maintain a standard of living which is measured by income, wealth and material possessions, and power and status in the community. The Nation at Risk reflects a cry that we've got to get back to that. Maybe that reflects the economic uncertainty that we've got now. How does that relate to vocational education? If we really are moving back to the basics, it does raise the question of where does the population of students involved in vocational education fit into that. And there are other special populations that may not fit into that. Equity has not been a major element of the debate about public education in Minnesota. So what happens to those people who don't fit in? The theme of getting back to the competitive spirit works against what I gather many of the people in vocational education believe--that participation in those programs should be broadened.

Watch the post secondary enrollment option which has been enacted here. That really forces parents to make some choices for their kids at an earlier age. And depending on who selects it, where they go, that program could turn out to move us in the direction toward the European model. There are pros and cons of this. But this country has a different kind of setting and there are countervailing issues; they have direct impact on kids in vocational education.

Olson: I responded differently when Nation at Risk came out. I felt that academic education needed that challenge--needed some shaking up. It did put education on the front burner

A Note About These Highlights

This is an excerpted transcription of the discussion following the summary of this paper. We have excerpted what we believe is a representation of the variety and diversity of ideas expressed in the discussion. In some instances we have taken some liberties in order to make sentences complete and to fill in words which are unintelligible on the tape due to coughing, laughter, or other types of sounds which tape recorders seem to adore. Participants have had the opportunity to review the comments presented here.

of the agenda. I recognize that there is some fallout and the cost that that has brought to vocational education. It seems that we haven't learned the things that we have been saying for so long in terms of acknowledging individual differences--that young people learn in different ways. Those of us in vocational education appreciate the options we have provided in this field--options that have allowed young people with all kinds of abilities to be turned on and to develop. I do not hang my head. In fact, I am very proud that my educational career has been in vocational education. And it's even more fun to be a Republican in vocational education!

I am reminded of the attempt (in today's discussion) to make mutually exclusive the concepts of competition and cooperation. I just think that's so much hogwash, and it's never been more evident than in the arena I work in. It's incredibly competitive--yet we wouldn't get anything done unless we cooperated. There's an atmosphere of competition and cooperation going on simultaneously. If we're honest, that is going on in just about every arena of our life. In education, there is a healthy aspect to competition in terms of keeping our vitality and our responsiveness, and yet there is a recognition that cooperation must occur and we must strive for that cooperation in order to get the best of all worlds. We need to revitalize and reintegrate, but we need to recognize that that can be done in a cooperative, competitive environment.

Starke: From the perspective of the Alexandria AVTI and the perspective of a lot of little AVTI's in Minnesota, we're concerned about secondary vocational education. What can we do *now*? In our community, the secondary vocational education people attempted to collaborate and failed. We got caught up in the *Nation at Risk*, and the academic swing caught us. So we're in a very perplexed state. We look at the call to integrate, and we say we can't do it the way we want to do it and we need to survive. What can we do *right now*? The fact of the matter is that you can integrate right now. The basics and vocational education can compliment each other, but it will take some individuals doing it. We don't have the time to wait for a national change. It isn't going to happen that fast. Who dictates that vocational education instructors at the secondary level can't integrate? They can. The good ones are doing it. But we're losing some of the good ones, and that becomes a problem.

The demand for excellence pushes equity to the back burner, but it doesn't have to be necessarily so. I think it behooves us right now as post secondary vocational educators to go back to the secondary educators--not waiting for a mandate from the government--and talk about equity for all education. We can do it. We can't do it the way we have been, but we can do it. Are we marketing it properly? Maybe that's part of the problem. We think that college-bound students aren't concerned about the technological revolution. That's a bunch of hooey! They're concerned. We just don't help them enough. It's going to take individuals.

Foreign languages have taken over in the town of Brandon where my children attend school. Two foreign languages are offered. But there is very little available to students in the area of vocational education. At Jefferson High School in Alexandria, there isn't time available for vocational education. Seventy percent of the high school students take two math courses. That's okay, but we need to do something to help the math teacher to make education relevant to the world of work.

What is the personality of vocational education? We've lost our personality or it's changed drastically at the secondary level. The attitude in our community is, "Don't worry about it too much. You've got the AVTI." How is vocational education going to survive in Alexandria? We have to move away immediately from programs to courses, because the programs are dying.

I believe that if we could identify our stakeholders, then we're just one step away from addressing this issue of excellence. I think vocational education has some tremendous opportunities. We're going to have to suffer a little bit, but we can't wait for a plan. We've got to do something quickly. I think we can if we care. We care.

Feldman: Poverty persists mainly because we have not built sound educational paths out of it. While we have mouthed our commitment, we have not created those climates where minority kids do not feel uncomfortable. We haven't done enough consciousness-raising. It's another arena that is not too late, and this is because the battles are now going on in higher education.

The twelveth grade in most institutions is a bloody waste of time, particularly the last semester. There isn't any reason why there shouldn't be advanced placement. There are a lot of models out there. But when you go back to our state legislators, it becomes once again a funding problem. It's silly, it's petty compared to what you pay for dropouts. One thing I can't understand is what in the world allowed our country to put 7 to 10 billion dollars a year into the pool for the disadvantaged and a half a billion dollars into preventive programs.

Olson: What would Marvin Feldman's vision of a different system be?

Feldman: I would like to see a state superintendent of public instruction and one board accountable for delivery of education. I would not tolerate a dropout rate of over 25% or a placement rate of less than 90%. I would build in measurable criteria and hold educators accountable. In the perfect world, we'd have only the regents and the delivery system--not county boards, not community college boards, not higher education boards.

Helling: It seems that the philosophies that came out during the '60's, which you (Feldman) helped write, have been tempered--that the career development model has been left out in the cold by vocational education. Career development to me was a process that fulfilled the criterion of being able to transfer over and get into math and science.

Feldman: If we had the resources tomorrow to develop a teacher retraining program in vocational education--which is desperately needed--you would get the support of higher education. This might be the moment because between now and 1992 they're hurting.

Helling: I think it is the moment.

Feldman: We can bargain now. This would be the time to do it, but I think it's wishful thinking. Remembering the days I was running area vocational schools in California, I'd have a massive undertaking to get my faculty to understand that dual mission. But it could be done.

CHAPTER V

Beyond Tinkering: Reconstructing Vocational Education

Jeannie Oakes

> **What the best and wisest parent wants for his own child, that must the community want for all its children. Any other ideal for our schools is unlovely; and acted upon it destroys our democracy. (John Dewey)**

This paper offers a vision of a reconstructed vocational education. The vision includes new purposes, organization, curricula, and language that promise to move vocational education into a central and essential place in schools of the future. With this vision, I argue that, rather than "improving" vocational education, current programs should be replaced with a core of highly-valued knowledge, broad intellectual and manual skills, and rigorous learning experiences to be taught commonly to all children in school. This argument is based on two premises. First, given the current and enduring crisis in educational quality and its distribution, vocational education can't be made better; it needs to be made fundamentally different. And second, vocational education can't be reconstructed independent of the larger educational context in which it is embedded.

A reconstruction of this magnitude is required if vocational educators are to overcome the unfriendly history and unwarranted assumptions that underlie current practices and effects. The events and assumptions that led educators to split the secondary school curriculum into "academic" and "vocational" halves are at the root of current troubles. Evidence about current school tracking practices suggests that this split curriculum has led to the disappointing effects of vocational education. Findings also suggest that, as long as this split is maintained, vocational educators will be consigned to act out the belief that some children, often those who are poor and minority, are unable to learn the things most valued by schools and society. The vision offered here represents a counter-hypothesis: The rigorous, developmentally appropriate, concept-based curriculum that the "best and wisest parent wants for his own child" can best provide all children with the knowledge and preparation for productive and satisfying occupations and lives. Carrying out this vision, however, will require that vocational educators adopt new philosophical, conceptual, and political underpinnings. Ultimately, it is education itself that must be improved by embracing the strengths implicit, but rarely manifest, in vocational education.

In the following pages, I will first sketch this vision of reconstructed vocational education. The second section of the paper reviews the evidence, understandings, and analyses from which the vision stems. Finally, I suggest what might be required to make reconstructed vocational education a schooling reality.

Reconstructed Vocational Education

New Purpose

The reconstructed vocational education that I envision would have the goal of providing to all students highly-valued and essential knowledge, skills, and attitudes that will enable them to function intelligently as adults in an uncertain, tumultuous, technology- and information-based twenty-first century. Fundamentally, these competencies and knowledge might be best thought of as the ability to apply basic, funded knowledge and well-developed "habits of the mind" to the unpredictable and non-routine problems and circumstances the future holds.

An emphasis on fundamental processes and principles (basic, generic, and transferable) is not a new idea in vocational education. Late nineteenth century advocates, for example, claimed that manual training would complement academic studies in a balanced education. Their argument stressed that students should learn mechanical processes, rather than prepare for particular trades, and that they should master general principles, rather than specific skills. They argued that processes requiring skill with the hands would simultaneously present problems for the mind. Dewey and the progressives later made a similar claim: if students worked with wood, metal, paper, and soil they could achieve alternate and important "ways of knowing." Today, too, many leading vocational educators call for a balance between education and training (See, for example National Commission of Secondary Vocational Education, 1984; Silberman, 1982, 1983). However, the conception of manual education as relevant and central to the liberal education of all students has never been realized. Prevailing program effectiveness criteria make priorities clear: Program content is often assessed for its match with labor-market needs; skill competencies are often measured by employers' hiring standards; job placement rates are often the most valued bottom line.

The new purpose offered above goes far beyond the call to balance training for specific occupations with education in basic processes and manual skills. It suggests, rather, that vocational educators must lead a fundamental reconsideration of the structure, the curriculum, and the language of vocational education and fundamentally alter the role of comprehensive schooling.

New Structure

A central tenet of this vision is that vocational education would become part of the common curriculum in comprehensive schools. That is, vocational education would be perceived and structured as legitimate "status knowledge" for all students at all ages (not, as currently, a booby prize for adolescents who can't make it in legitimate knowledge areas). I suggest reconstructed vocational education could be promoted as a "new basic" and become subject to the same scrutiny and standards as high-status subjects like mathematics,

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science, and the humanities. But it must go further because the necessary changes are not just curricular: they are structural as well.

Reconstructed vocational education is best taught to heterogeneous student classroom groups. No tracking system or differentiated curricula will achieve the essential purpose of providing students with competencies for functioning intelligently in their adult lives. The adult world is a heterogeneous community. Applying basic, funded knowledge and well-developed "habits of the mind" to the unpredictable and non-routine problems and circumstances of the adult world requries working productively and respectfully with the diverse array of others who share that community. The skills and attitudes that underlie working respectfully in diverse groups should be taught in school. The context for this teaching is heterogeneous classrooms.

Further, no tracking system can provide an equitable distribution of the new brand of knowledge and learning opportunities suggested here. Current practices indicate that, if separate vocational education programs were instituted for college-bound and work-bound students, differences in access to knowledge and skills would inevitably result. Students identified as bright (college-bound) would be taught concepts and "high-status" knowledge, students seen as slow (work-bound) would be taught facts, "low-level" skills, and good work habits. Placing reconstructed vocational education at a common curricular core taught to heterogeneous groups would have other necessary and beneficial effects: It would circumvent the institutionalized labeling and stigma vocational education students currently suffer; it would permit all students access to learning-oriented and achievement-valuing peers; and it would ensure all students the instructional benefits that accrue when teachers perceive that able students are present in the classroom. Additionally, heterogeneous classes per se have potential for enhancing the learning of all students.

Specialized and differentiated vocational preparation should be postponed until the end of common schooling. John Goodlad has suggested a series of three four-year phases of common schooling. All children would enter the first phase on their fourth birthday and finish the third at age sixteen. A fourth phase, not necessarily common, could provide ample opportunity for specific preparation for college, work, and community service. Goodlad also recommends that the twelve years of comprehensive schooling be filled with a balanced curriculum, 90 percent of which is common for all students. Of this common curriculum, 15 percent would be allotted for vocational education at all ages. The remaining 10 percent, "uncommon," would be free for students to pursue knowledge and skills of their choosing (Goodlad, 1984). I do not offer Goodlad's plan as a blueprint to be followed exactly, but rather as a model of a structure that would permit a common, heterogeneous vocational education for all students through their comprehensive schooling.

New Curricula

The current vocational curriculum is largely unsuited for the purpose and structure outlined above. Consequently, my vision also includes a fundamentally reconceptualized vocational curriculum that shifts vocational education away from training and skills. I believe that a reconstructed vocational curriculum could be organized around essential concepts drawn from the traditional academic disciplines. These concepts are appropriate because they represent the most solid knowledge that underlies all of the enterprises that we call work. And if, as this curriculum develops, the vision blurs so that it is increasingly difficult to tell if it is the academic curriculum or the vocational curriculum that is being reconstructed, so much the better.

Basic concepts. One set of basic vocational concepts could stem from philosophy, history, and economics. Vocational educators can legitimately assert that the application of these three disciplines undergirds the organization of work and, therefore, they are appropriate for the vocational curriculum. Concepts from philosophy and economics explain how society works; their application results in the economic structures and principles we follow in the conduct of production, management, and consumption of goods and services--processes that are at the heart of human communities. These principles and processes are clearly "vocational" and could become central organizing concepts of vocational education. Philosophical concepts that suggest how societies can be organized and governed, economic principles that explain how materials, work, and property can be coordinated, distributed, consumed, and exchanged, and historical perspectives on how these principles develop and change can replace curricula currently focused around "business" and "consumer education" topics and skills.

Science and mathematics provide a second source for a reconstructed vocational curriculum. The application of basic knowledge from these disciplines is technology. Technology, including computers, is clearly the purview of vocational education. Fundamental concepts and specific knowledge of physics, chemistry, geology, biology, and mathematics underlie nearly all industrial and agricultural activity. These principles govern the properties of materials used in production; they determine the methods used to tranform materials into goods and services (transportation, telecommunications, etc). Broad technology-relevant concepts from the sciences and mathematics could replace the current emphasis on "industrial education" and "trades."

Curricular strands. A common vocational curriculum orgranized around basic concepts of economics and technology could include four major strands.

-- Knowledge of those principles from academic disciplines that underlie economic processes and technology and an understanding of how those principles become transformed into work. This strand would be most like current "academic" classroom learning activities.

-- Doing economics and technology--concrete hands-on experiences with tools and materials, learning basic economic and technological processes in the classroom--designing, constructing, combining materials and organizing their production, distribution, and consumption (See Kourilsky, 1974, for an example of an experience-based economics curriculum). This strand would emphasize processes in their generic or purest forms. They would replace current laboratory or shop activities and include classroom or computerized simulations.

-- Experiencing how generic principles and processes translate into specific work in the real, complex, and messy world. This strand should emphasize field experiences that provide students with opportunities to see "first-hand" the applications of concepts and learn from the technicians doing this work. These experiences should replace field trips in elementary schools and work-experience for secondary students.

-- Values and attitudes regarding work and the workplace: e. g., the expectation for a healthy work environment and satisfying work (including cooperative working relationships); commitment to quality: and social responsibility in the creation and distribution of goods and services.

Instruction. The mode of instruction is essentially inseparable from the content of the curriculum. To be consistent with the curriculum (and the purposes and structure as well), instruction in a reconstructed vocational education could follow these guidelines: Instruction should emphasize learning processes and values that are consistent with valued and sustaining life and work skills--cooperation; team problem-finding and problem-solving; communication; decision-making; commitment; confidence in abilities; and boldness in developing ideas and approaches. Learning activities should be presented as real-life problems: full of ambiguity; bound to specific circumstances and constraints; dependent on formal knowledge and creative "figuring-out;" and with important consequences (See Sternberg, 1985). Depth, rigor, and intensity should guide the lessons planned for children. These count heavily in the "real world" of careers. Comprehensiveness, at the risk of superficiality, should be approached with caution.

The details of this curriculum could be developed by vocational educators in collaboration with mathematicians, scientists, economists, and cognitive psychologists. Together they could develop a model curriculum that blends essential concepts of technology and economics with laboratory and field experiences into an artful and developmentally-appropriate series of learning experiences. Basic concepts would ground all learning activities, and these concepts would appear and reappear in increasingly sophisticated forms as children get older. For example, the youngest children would learn concepts of production, distribution, and consumption by talking about manufacturing and growing products, and transporting and selling them to families. These concepts would be reinforced by visits to industries, farms, harbors, railroad stations, and stores. They would construct vehicles, ports, cities, and stores using blocks, wood, and sample tools. Senior high schoolers would revisit these concepts through intensive classroom study of theory and historical development (in genetics and the development of hybrid crops, for example); with controlled in-school laboratory and shop experimentation in inventing, growing, constructing, programming; and focused field experiences, with students connected with supportive adults who are occupationally engaged in the processes they're studying.

The model curriculum developed through the collaboration of vocational educators, academics, and cognitive psychologists could serve as a standard and guide for state and local program development. A guiding question for this development process can be, "What curricula do I want my own children to experience in school?" The focus on my own children, rather than on those students most suited to vocational education, is particularly critical. This focus will lead developers away from common and deeply held assumptions that usually drive curricula designed for students who are judged to be less capable and who are expected to have limited futures.

What's in a Name?

As trivial as it may seem, I suggest that reconstructed vocational education probably should not be called vocational. The foremost language problem of *vocational education* is its existence as a knee-jerk antonym for *academic education*. Vocational educators could use the power of language to eschew the fundamental schooling distortions the term *vocational education* represents and perpetuates. One such distortion is that schools should provide students with *specific* job preparation, rather than with general, broadly applicable, and transferable knowledge and skills. A second distortion the name perpetuates is the dichotomy between manual and mental activity in schools. Concrete, hands-on, and specific experiences are thought to prepare for the workplace and, conversely, abstract, paper-and-pencil, and mental activities prepare the mind for more complex future learning. Obviously, both are required for either jobs *or* academic pursuits. As long as the name "vocational" (or "career," "industrial," or "business") is used, this false dichotomy will persist.

New language can convey new purposes, new structures, and new curriculum. To start the discussion, I offer "technology and economic sciences" or "technological and economic literacy." *Literacy* is a useful term as long as it is not seen as *minimum* knowledge for those not capable of *mastery*. *Science* with its dictionary meanings fits nicely with the curriculum sketched above (Webster's Ninth New Collegiate Dictionary, 1985):

> a department of systematized knowledge as an object of study; knowledge covering general truths or the operation of general laws: and a system or method of reconciling practical ends with scientific laws

Why Reconstructed Vocational Education?

Unfriendly Origins and Unwarranted Assumptions

Tracking students into academic and vocational programs became standard practice in turn-of-the-century America with the spread of compulsory schooling laws, the proliferation of publicly supported high schools, and the influx of immigrants and newly-freed blacks into Northern cities. School leaders and boards of education debated about how to organize high schools for this new clientele; but their deliberations were soon overshadowed by the arguments of university presidents, industrialists, labor union leaders, and social scientists. Controversies centered on the nature of human abilities (particularly of non-English speaking immigrants and blacks) and on the functions of schooling. The following discussion provides a hint at the tenor of the debates.

The ideology of individual differences. The intellectual, moral, and even biological differences among turn-of-the-century adolescents were thought to be vast and immutable. A misguided social Darwinism posited that darker-skinned, recently-arrived immigrant youth were on a fundamentally lower rung of the evolutionary ladder. Since potential for school learning was seen to differ enormously among students from different social and ethnic groups, curriculum for more advanced groups (white, native-stock, Protestants, for the most part) was not seen appropriate for those of less capable groups (predominantly Southern and Eastern European immigrants). Lewis Terman, intellegence testing pioneer, wrote about immigrants, Mexicans, and blacks,

> Their dullness seems to be racial . . . Children of this group should be segregated in special classes . . . . They cannot master abstractions, but they can often be made efficient workers. (Terman, 1923, p. 28)

These views did not go uncontested, but the emerging school organizational pattern, tracking, clearly reflected their salience.

The link between schooling and work. Terman's statements supported the emerging belief that schooling should prepare students for work. The traditional academic curriculum seemed a mismatch, particularly for immigrant and minority youth. Furthermore, industrial employers needed immigrants socialized with the work habits and attitudes required to "fit in" as factory workers (proper deportment, punctuality, willingness to be supervised and managed) and with technical skills. These requirements of industry coincided with the curricular vacuum in schools. The curriculum was differentiated with tracks leading to further education for some, industrial work for others. One school administrator wrote,

> We can picture the educational system as having a very important function as a selecting agency, a means of selecting the men of best intelligence from the deficient and mediocre. (Pillsbury, 1921, p. 71)

Democratic education. Ellwood Cubberly wrote in 1909,

> Our city schools will soon be forced to give up the exceedingly democratic idea that all are equal, and our society devoid of classes . . . and to begin a specialization of educational effort among many lines in an attempt to adapt the school to the needs of these many classes . . . . (Cubberly, 1909, pp. 15-16)

The prevailing response, although consistent with Cubberly's prescription, was more reflective of American values of fairness and opportunity. Schoolmen claimed that by providing both vocational and academic programs they would develop a new form of democratic schooling. In 1908 the Superintendent of Boston Schools wrote,

> Until very recently *the schools* have offered equal opportunity for all to receive *one kind* of education, but what will make them democratic is to provide opportunity for all to receive education as will fit them *equally well* for their particular life work. (Boston Schools, 1908)

The problem of educating diverse groups of students (compounded by beliefs about racial and ethnic differences) had been met with a solution that relied on a newly-coined view of democracy. The rich and intriguing history, barely touched on here, provides the context for understanding why tracked schools made sense to turn-of-the-century policy makers and practitioners.[1]

These prevailing views together with the self-interests and political clout of industrial leaders led to the current structure and practice of vocational education--sorting students into separate and differentiated curricula. The notion of a balanced manual and academic liberal education for all students quickly became little more than empty rhetoric. Few educators today would explain student differences and school purposes as did their turn-of-the-century counterparts. Yet, there is little question that assumptions and schooling decisions from that era continue to guide the practice of a split vocational and academic curriculum.

The Inefficacy of High School Vocational Education

From its conception, then, vocational education has aimed primarily at imparting specific job-related knowledge, skills, and attitudes. So constructed, vocational education or training has claimed to provide economic benefits both to individual students and to society. Individuals benefit as they acquire the know-how that enables them to command greater economic rewards as they participate in the labor force. Society benefits by having an accessible pool of skilled workers prepared to maximize production, profits, and consumer purchasing power. Vocational education has also been driven by social goals. It has sought to provide a place in schools and the labor force for those students who otherwise would fail in educational and economic institutions. Increasingly, vocational education has attempted to provide and equalize access to education and jobs for poor and minority youth.

Effects. Despite these worthy intentions, little evidence exists that the economic and social benefits claimed for vocational education actually accrue. At the societal level, vocational programs can not be credited with either enhancing productivity generally or improving the quality of the labor force. For students in comprehensive secondary schools, participation in vocational education appears not to lead to greater likelihood of employment related to training, reduced unemployment, or higher wages (Berg, 1970; Berryman, 1980; Grasso & Shea, 1979; Rubens, 1975; Stern et al., 1985). While program effects are generally dismal, they have been particularly detrimental to poor and minority youth (Berryman, 1980: Stern et al., 1985). Continuing high dropout rates and negative social and educational consequences of low- and vocational-track placement suggest that a dual educational system may actually work against the occupational chances of vocational education students. In other words, vocational students don't seem to benefit from their vocational courses, and they miss the knowledge and status to be gained from academic programs.

Distribution of vocational education. Some evidence indicates that further race and class differentiation occurs within the vocational tracks, with blacks and Hispanics more frequently enrolled in programs that train for the lowest-level occupations (Oakes, 1983; NCES, 1985b).

In the Goodlad study, the content and format of vocational programs were found to differ for white and minority students (Oakes, 1983). For example, at the junior high level white students typically were enrolled in typing, home economics, and general industrial arts courses; minorities were far more frequently enrolled in classes preparing for specific jobs. One junior high with a mixed Hispanic-Anglo population had two-hour off-campus courses including building maintenance; duplicating skills; and home and community services (institutional and domestic work). Course enrollments were overwhelmingly Hispanic. At the senior highs in the study, even greater differences were found. White students had far greater access to business and general industrial arts courses. Minorities were more exposed to specific preparation for trades such as cosmetology, building construction, institutional care, needle trades, upholstery, housekeeping, and food services. The formats of courses differed as well, with minority students more often leaving campus for extended class periods. At one high school in the Southwest, low-SES Hispanic students received this low-level training 3 hours per day over a 3 year period. White students, on the other hand, far more often took vocational courses as a part of their regular school schedule (Oakes, 1983). The differences found in these schools were such that non-white students may be enrolled earlier and more extensively in programs offering specific training for low-status jobs in formats likely to distance them from academic learning and the mainstream of schooling.

Processes. Although studies of vocational education curriculum and instruction are few, what evidence there is suggests that problems abound. Most serious are the use of obsolete equipment and methods, teaching of skills unrelated to labor-market needs, (Advisory Council of Vocational Education, 1968; Stern et al., 1985), and in many schools an emphasis on specific training for the lowest-level skills--cosmetology, factory sewing, dry cleaning, building maintenance, and planting and picking in agricultural fields (Goodlad, 1984; Jackson, 1981).

Three issues emerge from these findings. First is the matter of feasibility. Schools cannot provide specific, relevant, and "salable" skills with sustaining power. Low-level skill obsolescence will become more and more of a problem, and very low-level skills (fast food, labor, data-entry, etc.) hardly warrant school "programs." Second, is the issue of need. Specific skills appear less and less frequently on the list of attributes employers say they want. As Lester Thurow commented some years ago, employers seem to value schooling, not for the skills that students acquire, but because successful students are "trainable" (Thurow, 1972). Increasingly, business and industry leaders cite literacy, flexibility, problem-solving skills, and general knowledge as the best preparation for the complex and changing demands of the workplace. The third issue is that of intrinsic value. Perhaps even more important than whether employers seek these specific skills, is whether curricula such as those cited above are what society, including educators, most desire for students in comprehensive secondary schools.

The Academic Consequences of Tracking

We now turn to the other side of vocational education--the diminished opportunities vocational students have to acquire more general academic skills.

The following discussion suggests that when schools assign students to vocational curricula, they have fewer chances to obtain a solid general education.

Who goes where. Schools typically use standardized test scores, teacher and counselor recommendations, prior placements and grades, and (for some senior high school students) student choice to classify students as academic, general, and vocational and/or to assign them to high-, average-, or low- ability groups. Considerable confusion exists in the research literature about whether placements are "meritorious" (based on ability) (Davis & Haller, 1980; Rehberg & Rosenthal, 1978) or whether race and class have substantial influence (Alexander & McDill, 1976; Jones et al., 1985; Rosenbaum, 1980b). Some analysts suggest that the two are inseparable, that race and class are imbedded in measures of ability and prior achievement and that, as a result, placement according to these measures can not be seen as strictly meritorious (See, for example, Amato, 1980; Rosenbaum, 1980b).

One finding about placements is undisputed, however. That is that disproportionate percentages of poor and minority youngsters (principally black and Hispanic) are placed in low-ability, general, and vocational tracks (NCES, 1985b; Rosenbaum, 1980a); further, minority students are consistently underrepresented in programs for the gifted and talented (College Board, 1985). These placements appear to result whether test scores, counselor and teacher recommendations, or student and parent choices are the basis for placement.

Access to knowledge. Tracking patterns have consequences for the learning opportunities schools offer. For example, the number, size, and character of the programs offered at schools can be influenced by the composition of the student body--a higher percentage of minorities can generate a larger low- and vocational track; a higher percentage of poor students can result in less rigorous college-preparatory programs (Hanson, 1986; 1985). Recent High School and Beyond data show that schools serving predominantly poor and minority populations offer fewer advanced and more remedial courses in academic subjects (NCES, 1985a; Rock et al., 1985). This work suggests that schools design tracking structures that make sense to them, given their student populations and the assumptions made about them; too often, it appears, students attending poor and minority schools end up with fewer academic opportunities available.

Track placement affects students' access to various course offerings and shapes the paths they take through the secondary curriculum. Typically, lower-track or vocational students have fewer mathematics and science courses available to them; they are nearly always required to take fewer academic courses (Guthrie & Leventhal, 1985; California State Department of Education, 1984; Vanfossen, Jones, & Spade, 1985). (And conversely, low-track students have access to a wide array of elective courses in the arts and vocational subjects that few college preparatory students can take; their schedules of required courses typically allow little time for electives.) Thus, the range of curricular opportunities available to students is restricted by their track placement.

Within academic classes students experience different curricular content. The emphasis in low-track classes is on low-level topics and skills, and the focus of high-track classes is on concepts, processes, and higher-order skills

(California Department of Education, 1985:; Metz, 1978; Hargreaves, 1967; Oakes, 1985; Powell, Farrar, & Cohen, 1985; Squires, 1966).

Teacher and resource quality. High School and Beyond data indicate that students in the college-preparatory track have disproportionate access to science laboratories (NCES, 1985b). Considerable annectodal evidences supports the widely-held belief that teacher quality varies among tracks, with high-track students having the best qualified and experienced teachers for their academic classes. And some evidence supports the notion that teachers, too, are tracked, with teachers with the lowest status in the school assigned to teach low- and vocational-track students (Findley, 1984; Hargreaves, 1967; Rosenbaum, 1976). Other evidence suggests that when teachers teach more than one level, their upper-track classes capture most of their attention and energy (Rosenbaum, 1976).

Classroom instruction. A growing body of evidence points to a clear pattern of tracking effects: Students placed in low-ability groups or non-college-preparatory tracks are subject to curricular and instructional inequalities (California Department of Education, 1984; Frieberg, 1970; Metz, 1978; Oakes, 1985; Vanfossen, Jones, & Spade, 1985). Differences exist in how time is used, in instructional quality, and in classroom climate. Time differences appear both in the use of in-class time and in the time teachers expect students to spend on homework. On both dimensions high-track students have the most time, low-track the least. Evidence also indicates teachers of high tracks are clearer, more enthusiastic, and use less strong criticism. Classroom learning tasks appear to be better organized and of greater variety. Teacher-student relationships vary in their warmth and supportiveness--with high-tracks advantaged. We find greater student disruption, hostility, and alienation in low-track classes; and, not surprisingly, teachers of low-tracks face more classroom management problems (Evertson, 1980).

Press for achievement. Substantial evidence exists that teacher expectations influence student outcomes. The term press is meant to encompass both the implicit, often subtle, expectations for learning and the more overt (even heavy-handed) push for learning. Press is affected by tracking. A number of studies have documented the expected influences of a student's track-level, and his or her "track-label," on teacher expectations (See Persell, 1977, for a review of this literature). In view of what else is known, it would not be surprising to find that the press for learning is not distributed equally in schools, that those students in higher tracks receive the bulk of it.

Peer associations. Track-assignment clearly influences peer associations on classes and in extracurricular activities; it is also linked to students' friendship choices (Alexander & McDill, 1976; Rehberg & Rosenthal, 1978; Rosenbaum, 1976, among others) and the academic orientations of one's friends (Vanfossen, Jones, & Spade, 1985). Considerable evidence also documents the importance of peer relationships on school effort and aspirations (See, for example, Coleman, 1961). When peer-groups are oriented toward academics, student achievement can be positively affected (See, for example, McDill & Rigsby, 1973; and Persell, 1977, for a comprehensive review of other work). Further, because placement in low tracks is based on student attitude, behavior, and motivation, as well as ability, low-track classes are likely to be particularly impoverished in peer resources toward achievement and positive school affect.

Student outcomes. School practitioners generally assume that tracking promotes students' achievement--that all students will have academic and vocational needs met best when they are learning in groups of students with similar capabilities or prior achievement. However, the bulk of the evidence does not support this widely-held belief. To the contrary, we find tracking most often works to the academic detriment of students who are not placed in college-preparatory groups. Further, self-esteem, aspirations, attitudes, and behavior are often negatively affected by low-track placements (See reviews by Calfee & Brown, 1979; Esposito, 1973; Findley & Bryan, 1971; Froman, 1981; Noland, 1985; Rosenbaum, 1980a, among others). On the other hand, we find that the least-able students can benefit from membership in heterogeneous classrooms without diminishing the education for more capable students (Esposito, 1973; Persell, 1977; Rosenbaum, 1980a; Slavin, 1983; Slavin & Madden, 1980).

Recent analyses of High School and Beyond data suggest that (controlling for student background and ability) membership in the college preparatory track is a powerful influence on student achievement (Rock et al., 1985). This makes sense; when students are exposed to more content and better instruction they are likely to do better on achievement tests. Even students who are initially similar in background and aptitude show increased differences resulting from their track placements. Tracking, therefore, has an effect on student outcomes independent of the characteristics which determined the track placement (Alexander & McDill, 1976; Alexander, Cook, & McDill, 1978).

Tracking appears to have long-term consequences. Tracking systems tend to be inflexible; when students move from one track to another, it's most often to a lower track (Oakes, 1985). Typically we observe the following process in schools: Initial and relatively small aptitiude differences among students (probably due to social background differences) (Calfee, 1979) are exacerbated by their group placements in elementary school and by the differences in classroom experiences, attitudes, interests, and expectations that accompany these placements. By middle school or junior high, teachers and counselors have little difficulty deciding the appropriate track placement for most students. It is unlikely that students are merely passive participants in the tracking processes, but that students' self-perceptions, attitudes, interests, abilities, and behaviors interact with school experiences to produce tracking effects. This interactive process cycles throughout secondary school, with differences in high- and low-track students' knowledge, abilities, and interests growing quite dramatically wider.

Curricular Inequality

The findings reported here show a frightening pattern of curricular inequality. These patterns are disturbing under any circumstances. Indeed, many a white middle-class suburban school assigns a fixed proportion of its students to a relatively lower quality of education. However, the patterns become particularly distressing given the disproportionate percentages of poor and minority students in the lowest-track classes. The concept of self-fulfilling prophecy--long established for individuals--can be seen to work institutionally.

By tracking, schools send a message that some children are gifted, bright, and academic and that others are average, slow, or vocational. Few students and teachers can defy those expectations.

Little evidence attests to the career-related benefits of vocational education or to the achievement benefits of non-college-preparatory tracks. But disappointing vocational education processes and effects should not propel vocational educators toward attempts to "improve" or "perfect" tracking practices. Neither will more and better teachers, techniques, and resources solve the problems reported in the literature. The historical and current contexts of tracking and vocational education makes it unlikely that different outcomes will result as long as schools maintain their current structure. Vocational education is the lowest rung on the curriculum ladder--the lowest track. The failure of vocational education is the failure of the structure that mirrors economic and social preconceptions of who is fit for particular life outcomes. Talented vocational educators; positive, well-designed, and well-funded programs; and firm commitments to democratic ideals are not enough to reform a structure designed, if you will, for the "deficient and mediocre."

Beyond Tinkering--A Call For Boldness

There are no easy answers, quick-fixes, or staff-development programs ready to attack the problem of tracked vocational education. Dramatically altered assumptions aligned with educational research findings and democratic values are required. Just as current practice assumes that some students can't or won't learn, schooling designed around common curricula and heterogeneity requires the belief that all students can and will. Just as separating vocational and academic curricula is the logical organization for curriculum built around skill-based learning, common vocational curricula and de-tracking probably requires curricula reconceptualized around organizing concepts and themes. Just as tracking is central to a system prepared to separate winners and losers, to sort and certify students for their adult lives, schools without tracking must focus on educational aims, aims to be achieved by all children.

This paper has offered a radical vision of a reconstructed vocational education. This is not a plan to make vocational education "better," but to infuse a common curriculum with a rigorous, high-status, body of knowledge, skills, and attitudes essential for all students in a complex and uncertain future. The special knowledge and skills of vocational educators make it logical that they play a central role. Such revolutionary change involves major risks.

One clear risk is the resistance of vocational educators themselves who will be confronted with rethinking everything they now take for granted as good vocational education practice. Vocational educators will also respond with self-interest by protecting their "turf." Robert Taylor addressed this problem in his response to Harry Silberman's recommendation that vocational education shift its emphasis to intrinsic, educational goals. Taylor wrote in the most recent edition of the Enclyclopedia of Educational Research,

> While it is hard to argue with the merits for vocational education [personal competence, aesthetic expression, integrity,

> **cooperativeness, and a heightened sense of altruism] . . . it should be pointed out that these are not the primary reasons that Congress provides federal funds for vocational education.** (Taylor, 1982, p. 2009)

While federal funds represent less than one dollar in eleven that are spent on vocational education, federal guidelines and criteria undoubtedly reflect the values of state and local policymakers as well.

More specific to the vision offered here, however, will be the more general and powerful resistance of school practitioners. The negative processes and outcomes for low/vocational track students are almost universally recognized and lamented. But many fear negative effects of de-tracking and a common curricula on the achievement of the highest-achieving students. Research findings that high-achieving students can learn equally well in heterogeneous settings do not pursuade practitioners, students, and parents who see high-track students receiving a better education than low-track students. Where tracking exists, the top-tracks do offer more to the students in them; it is difficult to give up that particular "bird-in-hand" for promises that these students would do just as well if tracking were stopped. Additionally, since parents and teachers of high-track students often comprise the most visible, vocal, and respected school constituencies, the concerns for "all the others" who might benefit are not so fully represented. Reconstructed vocational education as common curricula taught to heterogeneous groups of students is likely to encounter heavy resistance from practitioners and parents.

Clearly the reconceptualization I suggest here entails considerable practical, political, and financial risks. These risks cannot be countered by a step-by-step, incremental change in which important players are "brought along." Tinkering won't do it.

The new vocational education needs to establish a social and philosophical base for undifferentiated schooling with "economic and technology sciences" as a part of its curricular core. This base should rest on a moral rather than a technological stance on education. Central to this moral stance should be the reassertion of the common school as the heart of democratic schooling--schooling that all students deserve regardless of race, class, gender, or presenting abilities; schooling that provides access to what Dewey called the "funded knowledge of civilization."

Vocational educators' call for undifferentiated schooling structures and a common concept-based curriculum must stand on the following principles:

-- The context for making vocational education better for secondary students is making schools better generally.

-- Individual differences are not appropriately translated into school practice that implies "headedness" for some, "handedness" for others. This results in as great a disservice to the "heads" as it does to the "hands."

-- All students can benefit from a balanced curriculum. Further, the learning experiences of the "brightest" and the "slowest" students will be enhanced by the multimodal learning (manipulation of materials), problem-solving (non-routine problems), and learning lodged in real experience (moving from abstract to concrete) that a reconstructed vocational education will bring to schools.

Ultimately, to improve vocational education, vocational educators, first among themselves and then with the entire work and educational communities, must grapple with the critical questions: Whose interests are best served by the focus of programs on training students with skills to meet labor-market demands? Whose interests are best served by a focus on developing individuals who can intelligently determine the course of their own lives with informed decisions about society and their own work within it? In whose interests and toward what ends should vocational education strive?

I have suggested here that the answers to these questions will lead educators to reconstruct vocational education as a concept-based, rigorous, multimodal curriculum to be taught commonly to all students in elementary and secondary schools. A moral and political test of the answers to these critical questions and a test of the value of the reconstructed vocational education proposed here might be the following: Convene a national panel of labor and industrial leaders. This time, do not ask if this is the curriculum they want for their future employees. Rather, ask if this is the curriculum they want for their own sons and daughters.

NOTES

1. Fortunately this history has been richly documented in several excellent sources. See, for example Chapter 6 in Powell, Farrar, and Cohen's The Shopping Mall High School (1985). Other important sources include Callahan (1962); Cohen and Lazerson (1972); Goldman (1952); Gould (1981); Kliebard (1979); and Lazerson (1971), to name just a few.

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Highlights of Discussion
Following Oaks' Presentation

Gardner: Oaks' paper reminds us of the John Dewey quote about the lovely potential relationship between an education system and a democracy and how unlovely that relationship gets when different ideals are adopted. Oakes' paper points out that Dewey's vision has not been fulfilled in American society. The way we have structured education on the assumption that some people are "handed" and some are "headed," it seems to me, is a violation of the Dewey vision and something we need to work hard to overcome.

The Nation at Risk was not about the vision that leads off this paper. It was more about how to implement the things to which Oakes objects.

A common curriculum in a heterogeneous classroom, a common curriculum which is basic, generic, and transferable are the goals presented by Oakes. Those are good goals. They seem a bit difficult to translate into operational terms. At the center of that curriculum package are concepts which come from academic disciplines. I agree that that's a very important consideration, that those disciplines should be the sources for the new curriculum.

I agree with Oakes' contention that a new label is necessary. The term vocational education has become devoid of meaning because we tried to give it too much meaning.

The academic disciplines at the high school level and even the college level give a sense of remoteness, of abstraction, an attempt not to make life more understandable and simple but to make it more complex and mysterious. That's an overstatement. But it's a very difficult thing to do. The closer you get to the kind of activity base, the closer you get toward the low status end of the knowledge. I think that's the way it is in the real world. It's a difficult concept to bring about.

A Note About These Highlights

This is an excerpted transcription of the discussion following the summary of this paper. We have excerpted what we believe is a representation of the variety and diversity of ideas expressed in the discussion. In some instances we have taken some liberties in order to make sentences complete and to fill in words which are unintelligible on the tape due to coughing, laughter, or other types of sounds which tape recorders seem to adore. Participants have had the opportunity to review the comments presented here.

What's being suggested here is that a greater revolution take place. The big revolutions in American educational history were not curriculum revolutions; they were organizational revolutions. In the '60's, we talked about curriculum revolutions, but curriculum revolutions did not take place. I wonder why. Also, we have tended to ignore the most important, the most significant, most powerful, potential curriculum study in this country--or perhaps in the world: the old Eight Year Study. We systematically ignore what it said by the way in which we establish requirements for entry and exit to all kinds of educational programs. We need to go beyond the level we are now at. There need to be some people out there who start to organize themselves and start doing some of the kinds of things that are talked about in Oakes' paper. I do get concerned about the implication of the curriculum revolution that is proposed here. I agree with it, but my concern is again that there are many forces in our society that work against systematic curriculum reform (the Darth Vaders, leaders of the forces of "evil and darkness"). What we've got to do, I think, is to find some action-oriented people, some Luke Skywalkers, and get them to work on implementing this curriculum change.

Perry: Reviewing your (Oakes') paper provided me with an opportunity to get angry at the educational system on many fronts. The paper got me to thinking about a lot of things I've experienced in life. I thought I'm really glad to be in Minnesota because a lot of those things (suggested by Oakes) are happening in Minnesota secondary vocational education.

Vocational educators are kind of like schools. We have taken on those additional responsibilities--as schools have--to try to show the world that we do have the abilities, stamina, and strength to work with those so-called low-achievers and bring them into the realities of the workplace as well as into a respectable position within our society.

I sometimes question how we might achieve some of the things (with regard to Oakes' recommendations) if we don't have access. In many of the places that I visit throughout this state, we don't have access.

I do know from the last 10 years of looking at secondary vocational education that we do have a nice blend of high- and low-achievers. We have tutorial programs for low-achievers in vocational education programs--not everywhere, but in many places in Minnesota.

About the common curriculum--I believe that a portion of the vocational curriculum in the very skilled areas can be blended very easily and very well with those objectives in the math and science areas.

I may not agree with the suggestion of asking business representatives, "What would you like in this curriculum for your child?" I'm afraid of what they might tell you. When I've asked similar types of questions, I didn't like the response. But, overall, I have appreciated your presentation.

Hively: Vocational education should not be separated from the remainder of the K-12 curriculum. Nor is it possible to talk about preparation for work within the framework of secondary education only. Work habits and career expectations are developed long before a student enters the secondary program. Some experts in child development believe that the boundaries of personal aspirations are set by age four. For someone who at age four knows no one who works, some pretty drastic actions may be needed early on to enlarge his perception of his vocational future.

It's important that vocational education be mainstreamed right back to kindergarten. Every teacher should be teaching about work opportunities in every subject. For example, when you teach reading, you also bring in the full range of people who put a book together--the paper maker, binder, writer, illustrator, printer, editor, publisher, etc.--to demonstrate what went into creating the text. Otherwise, how will students ever know about different kinds of work if they never knew anyone who worked? If you don't start early by capturing the imagination of the elementary school student about his/her choices for the future, you're not going to have that many kids who are still in school to participate in your 11th and 12th grade vocational education programs.

I liked your point that the mode of instruction is inseparable from the content of curriculum. This approach is holistic. Just as curriculum, mode of instruction, and the climate for learning are part of one educational system, so is the educational system part of the total community. Other community systems such as the parks or libraries also have impact on student development. The philosophy presented in the Oakes' paper is a community ethic. When people talk about how the schools are taking on greater burdens, and ask how to cope with those burdens, the appropriate response from educators should be, "We're going to have to work with the other systems to share the burden." And the whole community is going to have to say, "We're going to work with the schools to face these problems."

Business and labor are interested in employability just as much as the schools. Pressure from business and labor is what will create the revolution. I don't think that it is going to come from the curriculum coordinators inside the school system. Vocational education should be mainstreamed to be part of every element of the curriculum, K-12. But vocational education won't achieve the credibility to implement that understanding unless the system is pressed by the outside community--business, labor, and public agencies--to understand that employability is the primary product of K-12 education. Work skills are just as valued within the context of post-secondary education as they are on the assembly line. They are generic, and every student needs to acquire them early.

To me, reconstructing vocational education is part of a larger task of reconstructing our attitudes to see education as one system working with other community systems to develop healthy, productive citizens.

Copa: I think vocational education was trying to help and didn't recognize the scenario that you (Oakes) painted about what vocational education was doing to lower track, lower ability, disadvantaged students. What you've pointed out is that we may have been "used." One reaction I have is that we were trying, but were not conscious of the bigger picture of how this was all being put together and that we may have been exploited in the process.

The first and last parts of your paper (Oakes') lead to the implication that the best and wisest parents are the people who are leaders in business and industry. And it leaves out a sense that we are a pluralistic culture with a democracy. I don't think democracy means common, that every thing should be common. It has some notions of equity, notions of recognizing individual differences. So when you ask for a common curriculum, how would you characterize it in a society where there are a lot of individual differences?

Oakes: The fundamental dilemma of American schools is: How do you deal with individual differences in a society that values equality and equality of opportunity? I like John Goodlad's notion that we value things differently, that there are some knowledge and skills worth more than others, and that all kids need access to the things that are most valuable. If we pay attention to cognitive psychology, we can learn about how, if knowledge is taught in developmentally appropriate ways, we're going to notice a greater commonality among people than we currently focus on. Goodlad builds into his common curriculum a 10% that he calls a "kid voucher." A child has a right to spend 10% of his educational resources, from the time he first enters school, in a way that that child chooses--in or out of school. That 10% of your education is self-determined. It allows for some diversity.

Bishop: I think we make a terrible mistake to ask business leaders what kids should learn. They are dealing in a world that is not relating to a very large share of the population. They have no basis for judging, and they don't have an information system that would provide more information. I think asking parents what they think makes sense, and that's what we do now. We let kids and their parents choose a curriculum.

The key distinction is taking the tough courses--courses with high standards--and the courses that don't have high standards. The distinction is not between vocational and nonvocational courses. The issue is standards and rigor, not vocational and nonvocational. Vocational education doesn't have to be nonrigorous simply because it's occupationally specific. It has to be made rigorous.

Another myth that needs to be put to rest is that vocational education yields no economic payoff. Basic skills yield almost no payoff. The effect of adding a vocational education curriculum into a person's education in high school is considerably larger than one year of study in basic skills. There's a myth that the key issue is economic payoff. If we're going to decide these things simply on that basis, occupationally specific training in high school has a reason for continuing in existence.

Tennyson: One of the first goals (which Oakes mentioned) is the development of critical thought. That's so important, and it's so missing in our schools today. Whether we're in vocational education or not, we've got to get on with this step.

I like the idea, too, of retaining the experiential component. The suggestion that we postpone choice of occupation until after common school and then do skill development is supported very well by research. The youngsters are not mature enough to make career choices while still in high school. On the other hand, as Jan Hively pointed out, giving attention to career development from first grade up is extremely important and necessary for all of the kids. Do you think, in its present form, that this new curriculum (Oakes' plan) would address those concerns we were talking about yesterday--self-esteem and dropout problems?

Oakes: I wouldn't have set it forth if I didn't think that it certainly had a better shot. I worried when I talked about using traditional disciplines because of how badly we school the academic disciplines. And I would never suggest that vocational education imitate, say, the English/language arts curriculum the way it's taught. That would be a terrible error. But if a multidimensional curriculum was developed that's full of multimodal activities, moving from the concrete to the abstract, and where there are various ways available to demonstrate competence, and kids are working together in teams instead of always being in individual competition--I think that kind of multidimensional education as a basis for curriculum--that vocational educators are closer to than any other of the school subject fields--would be a very hopeful combination for reducing dropout rates and other concerns we talked about yesterday.

Feldman: Would it be rigorous?

Oakes: It better be. Rigor, to me, has to do with sustained thinking about difficult problems that have real consequences.

I come down on the side that a common curriculum shared by diverse groups in this society has the best shot at being truly democratic education. I worry about the notion of choice--an issue we have not critically examined. I worry about when a child enters the ninth or tenth grade, that he or she and the parents sit down and sign on the dotted line saying, "Yes, I'm going to be in the vocational program," or "I'm going to be in the college preparatory program." We too easily interpret that as a free and informed and unconditional choice. We need to look critically at what happens to children and their parents between the time they enter school and the time that choice is made. What kind of knowledge and attitudes produce that choice?

Helling: I don't think the parents know best. They're a product of the system which has brought us to this crisis. The values of the school system are a function of a society that has honored and rewarded cognitive as opposed to affective and psychomotor development which vocational education has always honored. All of us here, college educated, are intellectually trying to solve the problems. We value that approach. I guess I don't have faith in this process although I don't know a better alternative.

I'd like to suggest that those who valued cognitive above other ways of developing are the ones that drove that kind of situation (tracking) to exist in the first place. I resent that when vocational education stepped in, showing compassion and providing for those other kids, that now we have to throw that away. We're going to lose that core and I'm afraid we will.

Oakes: I share those anxieties. I hope I didn't communicate a blame to vocational educators for the mess we're in because I agree with you. I think it's the elitism and the dominance of traditional subject areas and methodologies that have created the problem. I don't believe it was the vocational educators who brought about the split curriculum.

No big master plan is going to alter the subtle little distortions that happen--that are disrespectful to a great percentage of kids--in school settings. I'm so appreciative of work like that being done at the University of Minnesota that's trying to get inside those programs and trying to understand the dynamics of what happens to human beings and settings, that gets beyond the gross generalizations that we make across programs. That knowledge is powerful and helps to liberate practitioners from repeating the patterns that are worrisome to us.

CHAPTER VI

Occupationally Specific Training in High School

John Bishop

About half of all youth either do not complete high school or end their formal education with the high school diploma. The proportions of minority youth, of disadvantaged youth, and of handicapped youth who do not enter post-secondary education are even higher. Should these youth receive occupationally specific education and training before they complete their formal schooling? If so, what form should this education take? Should the goal of the occupational component of high school vocational education be occupationally specific skills, career awareness, basic skills, or something else? What role should employers play in the occupationally specific training provided or sponsored by high schools?

Most of the young people entering professional, technical, and managerial occupations start their occupational training in a school. Higher education is predominately occupational education and is becoming more so each year (see Table 1). In 1980-81, only 17 percent of master's degrees and 33 of bachelor's degrees were in traditional liberal arts fields. Many of those who get these degrees remain in school to get a Ph.D., M.D., DDS, or LLB, all of which certify 3 or more years of intensive occupational training. Consequently almost all college graduates obtain training for a particular occupation before leaving school.

Where should the nearly 63 percent of the labor force who have no formal schooling beyond high school obtain their occupationally specific training? These workers account for the bulk of the nation's blue collar workers, sales workers, and clerical workers. The training requirements and intellectual demands of many of these jobs are quite considerable. In clerical jobs, for instance, the time devoted to training a new employee during the first 3 months on a job has a value equal to 45 percent of the output of a worker with 2 years of tenure at the firm. Training costs during the first 3 months for other jobs filled by high school graduates are 36 percent of an experienced worker's potential output for retail sales jobs, 38 percent for blue collar jobs, and 25 percent for service jobs. Should these workers receive their initial occupationally specific training in school or on a job?

Young people who have developed relevant occupational skills as part of their high school education are presumably more productive workers and require less training. How large are these effects? Do employers consequently prefer

TABLE 1

EXTENT OF OCCUPATIONAL SPECIALIZATION IN SECONDARY AND POST SECONDARY EDUCATION

Variables	1980-81		1967-68[5]	
	Number of Certificates or Degrees (000's)	Percent Occupational	Number of Certificates or Degrees (000's)	Percent Occupational
High school graduates	3,026	25%[1]	2,702	24%[1]
Completers of occupational programs of noncollegiate postsecondary schools.[2]	1,109	100%	N/A	N/A
Associate degrees awarded[3]	416	63%	159	43%[6]
Bachelor's degrees awarded[4]	935	67%	632	51%
Master's degrees awarded[4]	296	83%	176	79%
Doctorate degrees awarded[4]	33	100%	23	100%
First professional degrees awarded[4]	72	100%	34	100%

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[1] Estimate of percent vocational is based on self reports of seniors from surveys of the Class of '72 and the Class of 1980 (High School and Beyond).

[2] Enrollments and Programs in Noncollegiate Post Secondary School, 1978. Some of the Associate degrees in occupational fields reported in Line 3 are also counted as completers in Line 2.

[3] Table 118, Digest of Educational Statistics.

[4] Table 100, Digest of Educational Statistics, 1983-84. A PhD in any field was considered to be occupational preparation. The following fields were considered to be occupational preparation at the bachelor's and master's level: agriculture, architecture, business, computer and information sciences, communications, education, engineering, fine arts (performance), health professions, home economics, library science, militariy science, public affairs and theology. The fields considered to be non-occupational at the bachelor's and master's level were: area studies, biology, art history and music appreciation, foreign languages, letters, mathematics, physical science, psychology, social science, and interdisciplinary majors.

[5] The source for number of earned degrees was the 1969 Digest of Educational Statistics.

[6] The associate degree breakdown is for 1970/71 and is taken from Table 124 of 1977/78 Digest of Educational Statistics.

to hire young people who have received vocational training in high school? What are the features of a high school vocational program that have positive effects on the workers' productivity on the job and attractiveness to employers?

The paper is organized into five sections. The questions addressed by each section are as follows:

1. Priorities: basic skills vs. occupational skills.

2. Is there a trade-off between basic and vocational skills?

3. Are the occupationally specific skills learned in high school being used?

4. How large are the benefits of high school vocational education and what causes them?

5. Where are occupationally specific skills best learned?

A short summary concludes the paper.

Priorities: Basic Skills Versus Occupational Skills

Over the last 80 years, industrial psychologists have conducted hundreds of studies, involving hundreds of thousands of workers, on the relationship between productivity in particular jobs and various predictors of that productivity. This enormous body of research has recently been reviewed and aggregated by Hunter and Hunter (1984) and Reilly and Chao (1983) and others. Using supervisor ratings as the criterion, the mean validity (correlation between predictor and criterion adjusted for the unreliability of the criterion) is .54 for work sample tests, .49 for peer ratings and behavioral consistency experience ratings, .48 for job knowledge tests, and .43 for assessment center evaluations (Hunter & Hunter, 1984). For predictors used for entry-level jobs for which training will occur after hiring, the validities are .53 for composites of aptitude tests which measure what are popularly called basic skills, .44 for a job try-out, .37 for biographical inventories, .26 for reference checks, .18 for experience, .14 for the interview, .13 for training and experience ratings, .11 for grade point averages, .10 for years of schooling, .10 for interest inventories, and -.01 for age. Direct measures of both basic skills (attitude tests) and vocational skills (job knowledge tests) have very large associations with reported productivity. This occurs regardless of whether productivity is measured directly or by supervisory ratings. Aptitude tests can be classified into three basic types, each measuring different abilities:

- General mental ability--General mental ability tests (such as the Scholastic Achievement Test (SAT) focus on verbal, quantitative, spatial, and reasoning abilities. Thus, they test the competencies that are the prime objectives of schooling. School attendance has been shown to improve performance on these tests (Lorge, 1945). Improvements in education were probably responsible for the increase between World War I and World War II of one standard (the equivalent of 110 SAT points) in the average test scores of army draftees.

- General perceptual ability--General perceptual ability is a combination of perceptual speed and spatial and mechanical ability. It includes the ability to perceive detail quickly, to identify patterns, to visualize objects, and to perform other tasks that rely on speed or accuracy in picking out an individual element from a mass of apparently undifferentiated elements. It also involves the ability to perceive spatial patterns and knowledge of mechanical and electronic principles and facts.

- Psychomotor ability--Psychomotor tests are used to determine the ability to physically manipulate objects. An example is a dotting test, which reguires the test taker to place a single dot within each of a series of very small circles.

Table 2 presents correlations between each of these types of aptitude tests and job performance for a variety of specific occupations.

TABLE 2

VALIDITY OF ALTERNATIVE PREDICTORS OF ON-THE-JOB PERFORMANCE BY OCCUPATION

	Aptitude Test		
Occupation	General Mental Ability	General Perceptual Ability	Psychomotor Ability
Managers	.53	.43	.26
Clerical	.54	.46	.29
Higher level sales	.61	.40	.29
Protective services	.42	.37	.26
Services	.48	.20	.27
Skilled trades & crafts	.46	.43	.34
Industrial (semiskilled)	.37	.37	.40
Vehicle operators	.28	.31	.44
Sales clerks	.27	.22	.17

Summarized from Hunter and Hunter (1984)

The results provide important evidence that basic skills (the abilities measured by general mental ability tests) improve productivity in a great variety of jobs including many of the jobs for which training is provided by high school vocational education programs.

The results summarized in Table 2 can be used to calculate the increase in productivity on a given job produced by a worker having a 110 point higher score on both the math and verbal SAT. Conservative calculations indicate that those with the higher scores are between 11 and 16 percent more productive in clerical jobs; 10 to 14 percent more productive in skilled trades, crafts, and service jobs; 8 to 11 percent more productive in semi-skilled factory jobs; and 6 to 8 percent more productive in vehicle operator and sales clerk jobs.

Clearly all workers need good basic skills. They need to be able to reason, solve problems, and communicate both verbally and in written form, and elementary/secondary education needs to place the highest priority on developing these abilities. The responsibility for achieving these objectives does not rest with English and math teachers alone; history, art and vocational teachers must reinforce (i.e., demand) basic skills as well. In fact, however, many vocational teachers do not organize instruction in ways that require students to employ basic skills. Their students spend only 3 to 7 percent of their time applying basic skills to learning vocational skills (Halasz & Behm, 1983; Halasz, Behm, & Fisch, 1984).[1] When these findings have been presented to vocational teachers, their reaction has been, "It is not my responsibility" (Halasz, personal communication). Time-on-task findings and teacher reactions would probably be similar in art, health, science, and many other courses. These attitudes should be changed. The newly developed principles of technology courses are a positive development but not sufficient on their own. Vocational students should be expected to learn some of their occupational skills from printed material. Verbal explanations and visual demonstrations by the teacher should not be the only mode of instruction. Vocational students need to get practice explaining job tasks to others and writing out instructions, for career advancement will depend as much on the ability to teach as on the ability to learn. Clearly, more should be demanded of the vocational students.

Does the finding that basic skills are important to a worker's productivity imply that schools should deemphasize the teaching of skills specific to particular occupations? Not necessarily, for it is occupational and job specific skills that make the worker more productive. When tests of job knowledge (vocational skills) compete with tests of general mental ability (basic skills) in predicting job performance measured by actual work samples, the job knowledge tests turn out to have by far the greatest impact (Hunter, 1983). The finding that job knowledge had much larger direct effects on performance than cognitive skill *per se* implies that the major contribution of cognitive skills to productivity is that it *helps the worker learn new tasks more quickly*.

Thus basic skills and occupational skills are complements rather than substitutes. Occupational skills and knowledge are essential because they directly affect productivity. Basic skills are essential because they contribute to the learning of job specific and occupational skills. Job specific and occupational skills are generally heirarchical, and changes in skills requirements are typically incremental. Consequently new skills generally cannot be learned until a foundation of occupational and job knowledge has been developed. At some point every individual must start building his/her foundation of occupational and job specific skills.

Is There a Trade Off Between Basic and Vocational Skills?

Since the total number of courses that one can complete during high school is limited, an academic curriculum tends to restrict the number of vocational courses one can take, and vice versa. Consequently taking vocational courses may represent a trade-off between the development of occupationally specific skills and the development of basic and academic skills.

Although a number of papers have examined the effects of curriculum on outcomes such as grades, test scores, career aspirations, and friendship patterns, most of these papers use self-reported curriculum track as the chief independent variable measuring curriculum (Rosenbaum, 1976; Alexander, Cook, & McDill, 1978; Heyns, 1974; Rehberg & Rosenthal, 1978; Alexander & McDill, 1976; Jencks et al., 1972; Hauser, Sewell, & Alwin, 1976). Rosenbaum (1980) uses principals' report of curriculum track. The findings of these studies are mixed. Some conclude that academic track has an important positive effect on outcomes such as academic achievement and career expectations (Rosenbaum, 1976, 1980; Alexander, Cook, & McDill, 1978; Alexander & McDill, 1976), while others disagree (Rehberg & Rosenthal, 1978; Jencks, 1972; Heyns, 1974; Hauser, Sewell, & Alwin, 1976).

All of these studies are marked by important methodological shortcomings. These include absence of longitudinal data, inadequate control for variables that may affect both track placement and the outcomes, and poor measurement of the curriculum variable. The latter difficulty characterizes all of the studies cited and is critical to the validity of their findings. Studies of curriculum effects on post high school labor market outcomes found early on that track placement is an inadquate measure (Campbell, Orth, & Seitz, 1981; Meyer, 1981).

Comparing students pursuing different curricula. To correct these methodological difficulties in past research, an investigation was conducted with the sophomore cohort of the High School and Beyond data. A longitudinal model was constructed in which base-year measurements were used to predict the change between sophomore and senior years in test scores and other outcome variables. An extensive set of controls for variables that may influence both curriculum and the outcomes were instituted. These include an array of socioeconomic background variables, grades reported on the base-year test scores, base-year attitudinal variables such as self-esteem and locus of control, base-year educational and occupational expectations, and parents' career expectations for their children. A large number of measures of curriculum were used to assess curriculum effects, including base-year, self-reported curriculum track (vocational and academic), self-reported number of courses taken between the sophomore and senior year in a variety of subjects, and self-report regarding whether the respondent had taken algebra II, trigonometry, calculus, physics, chemistry, biology, an honors English course, and an honors math course.[2]

The changes between the sophmore and senior waves of data collection were studied. The outcomes studied were verbal test score, math test score, science test score, civics test score, number of years of school respondent expected to complete (educational expectation), occupational status expectation, self-esteem, sense of control over one's fate (locus of control), an index of six department variables, work orientation, and grades in school.

The results of these analyses show that curriculum does, in fact, have a strong influence in many of these outcomes, but traditional measurement of curriculum by reference to track placement is inadequate to capture all of these effects. The traditional track variable (self-reported membership in the academic or vocational track) has little or no impact on any of the eleven outcomes (not shown).

When, however, specific course descriptions are used (e.g., Algebra II, physics), the effects of taking a college preparatory curriculum of calculus, trigonometry, algebra II, physics, and chemistry are striking (see Table 3). Holding the total number of academic courses and their distribution across fields constant, taking the 5 college preparatory math and science courses listed above raised math and science performance by 3/4 of a grade equivalent, verbal test scores by 1/3 of a grade equivalent, and civics test scores by 47 percent of a grade equivalent.[3] If a student takes 4 additional yearlong math and science courses but avoids the more rigorous courses listed above, math test scores increase by 1/4 of a grade equivalent but verbal and civics test scores decline by an equal amount.

The results also indicate that vocational courses sometimes contribute more to the development of basic skills than watered-down courses in academic subjects. Holding the academic course load constant, taking 3 full-year business and office courses raised verbal and civics test scores by 20 and 15 percent of a grade equivalent respectively. Taking 3 full-year courses in the technical area raised math performance by 15 percent of a grade equivalent. Trade and industry courses and the residual category of vocational course had small negative effects on test score gains.

Why does taking a college preparatory curriculum in math and science have such salutory effects on a whole range of tests? College preparatory classes are typically more demanding than other classes. This is clearly the case in our data for the students that took all 5 of the college preparatory classes got significantly lower grades than those who took other courses in these fields. Apparently the key determinant of learning is the rigor of the courses taken, not the total number of academic courses or the total number of hours spent in a school building during a year.

A very different approach to the question of the effect of curriculum--comparing the effects of school policies designed to increase/decrease emphasis on academic competencies--comes up with a similar conclusion (Hotchkiss, 1984). Controlling for school and location characteristics is, of course, crucial to the validity of this comparison. A total of 19 variables were used to control for curriculum, resources, climate, and teacher characteristics.[4] The emphasis placed by the school on college prep courses rather than vocational or nonacademic courses was measured by: the distribution of sophomores between vocational, general, and academic tracks and the number of math and science courses offered, the number of vocational courses offered and the number of nonacademic and nonvocational courses offered. (The courses that were included in this latter category were art, drivers education, ethnic studies, family living, sex education, and home economics.) The results are presented in Table 4. Increases in the number of math and science courses offered by the school produced substantial increases in performance on the verbal test, the science test, and

TABLE 3

EFFECTS OF SELECTED CURRICULUM VARIABLES ON CHANGES IN ACHIEVEMENT, ATTITUDES AND ASPIRATIONS

(Percent of a Standard Deviation)

		Curriculum Variables			
		4 years Math & Science in Junior & Senior Yr. (not College Prep)	College Prep vs. Non College Prep.	3 Years of Business/ Office	3 Years of Technical
Verbal test score	M	-9***	13***	7***	3
	F	-6***	10***	6***	0
Math test score	M	8***	29***	-4	6***
	F	9***	22***	-2	4
Science test score	M	-5	30***	-4	1
	F	-3	19***	0	-2
Civics test score	M	-8***	17*	0	2
	F	-8	12	10***	-1
Grade point average	M	-3	-19**	4	7**
	F	3	-18**	13***	7
Internal locus of Control	M	0	8	-3	-5
	F	3	12	4	10
Self esteem	M	5	21**	11***	2
	F	3	11	6	1
Work orientation	M	7	3	5	-2
	F	-3	4	4	-2
Good deportment	M	9**	28***	-3	-1
	F	6	19***	12***	-3
Planned years of schooling	M	-1	24***	9**	-4
	F	12***	11**	-1	-1
Planned occupation	M	11**	25***	-5	11**
	F	-9	16**	2	-5

NOTE: Entries are coefficients scaled approximately as a percentage of a popoulation standard deviation of the outcome being studied. For the test scores a one standard deviation improvement is roughly equivalent to a gain of three grade equivalents or a 110 point improvement on a SAT test. A one standard deviation improvement would cause an additional to more from the 50th to the 84th percentile on the characteristic, so impacts on percentile rank in class for grades or deportment can be calculated by dividing the coefficient by 3. The dependent variable was the change between the end of sophomore and senior years. The models used to derive these estimates contained a total of 75 control variables. Included among the control variables were the sophomore values on the 10 other outcome measures, a great variety of specific courses, years of courses in specific subjects taken during freshman and sophomore year and during junior and senior year, family background, self-assessed ability to succeed in college, and parental pressure to attend college.

*Statistically significant at the 95 percent level.
**Statistically significant at the 99 percent level.
***Statistically significant at the 99.9 percent level.

TABLE 4

IMPACT OF SCHOOL LEVEL CURRICULUM VARIABLES ON TEN OUTCOMES
(Standardized Coefficients)

	Increase in Vocational Track at Expense of Academic	Increase in Vocational Track at Expense of General	Increase in Number of Vocational Courses	Increase in Number of Math & Science Courses	Increase in Non-Academic and Non-Vocational Courses
Verbal test score	+.005	-.003	-.011**	.018***	-.009
Math test score	.000	-.005	.003	.003	.003
Science test score	.005	.000	-.005	.026***	-.006
Civics test score	.001	-.014*	.008	.020**	-.023***
Educational expectations	-.025***	.008	-.016*	.005	.002
Occupational expectations	-.001	-.016*	-.003	-.014	.005
Deportment index	-.0096	-.006	.008	.006	.008
Work values	-.0091	.008	-.008	+.004	.009
Self-esteem	-.0021	.000	-.003	-.004	-.004
Locus of control	.0089	-.002	-.015*	.010	-.004

NOTE: Models control for socioeconomic background of the student, the social and racial composition of the study body, percent dropping out and attending college, and 20 other school characteristics.

* $p \leq .05$.
** $p \leq .01$.
*** $p \leq .001$.

the civics test. Indeed, the number of math and science courses was the only school characteristic to have highly significant effects on 3 or more of the 4 measures of academic achievement. Increases in number of vocational courses offered by the school lowered educational expectations, internal locus of control, and verbal achievement but not math, science, or civics achievement. Increases in the number of nonacademic, nonvocational courses decreased the civics test score. The proportion of sophomores reported to be in academic, general, and vocational tracks did not have large effects on the basic skills.

The results are important for two reasons. First, they are evidence that taking a college prep curriculum does cause improvements in performance on the standardized tests. Second, they imply that a school's pattern of course offerings has important effects on learning, and that school boards and principals who choose to increase emphasis on academic coursework can achieve modest but real gains in academic achievement.

If the increase in emphasis on math, science, and other college prep courses results in the noncollege bound students taking fewer vocational courses, there will be a trade-off, however. Non-college-bound high school graduates who have taken many academic courses and no vocational courses and who do not go to college earn less in the years immediately after graduation than those who have taken vocational courses (Bishop, 1985; Campbell et al., 1986). Ways must be found for the students who are not planning to enter college and are taking a vocational concentration also to get a solid grounding in basic skills and the math and science courses that are often considered to be solely for the students in a college preparatory curriculum. In order to develop the skills that will be essential for advancement in their career, vocational students must be encouraged and maybe required to take the more demanding math and science courses that they often avoid.

The total number of academic courses taken does not matter nearly as much as the standards and content of courses that are taken. Legislated increase in the number of academic courses required for graduation will increase achievement only if the standards and content of the courses taken are upgraded.

Are the Occupationally Specific Skills Learned in High School Being Used?

During their four years in high school, 1982 graduates took an average 2.3 Carnegie units of exploratory vocational courses (industrial arts, home economics, typing I, etc.), 2.1 units of occupational vocational courses, and 17.2 units of other courses. The twenty-seven percent of these graduates who described themselves as specializing in a vocational field obtained 2.8 units in exploratory vocational courses, 3.7 Carnegie units in occupational vocational courses, and 14.9 units in other areas (Table 3.3, The Condition of Education, 1984).

This implies that the 73 percent of students who report they are not specializing in a vocational field account for 67 percent of the students in exploratory courses and 52 percent of the students in occupational courses. The heavy representation of nonspecialists in exploratory courses is understandable and appropriate. It is, however, quite puzzling that a major share of the students taking occupational vocational courses do not have career aspirations in the field. Even among the graduates who have taken 2 or more occupational vocational courses in a specific area (the concentrators, limited concentrators, and concentrator explorers of Paul Campbell's typology) (Campbell, Orth, & Seitz, 1981), many students apparently have career objectives that are not furthered by their vocational coursework. Twenty-eight percent of these students enter a four-year college or university after high school (unpublished tabulation of 1983 NLS Youth provided by Paul Campbell).

Why are so many noncareer-oriented students dabbling in occupational vocational education? Counselors and vocational teachers report that some of the students taking vocational courses are there to avoid more difficult academic subjects or to get permission to take a job during part of the school day. A more favorable interpretation of the dabbling is that it reflects uncertainty about career goals. However, the occupational courses offered by high schools are not designed for career exploration. They generally require a large time commitment. The student learns about only one potential career, not about alternatives. The classroom/lab environment is quite artificial; taking a job, unpaid internship, or interviewing and shadowing workers in an occupation (as in EBCE) is probably a better way to learn whether one wants to pursue a particular occupation as a career.

Another indicator of the lack of career orientation among many vocational students is the low rates of training related placement. Most studies of the training relatedness of the jobs obtained by graduates of vocational programs are based on questions like, "On your present job, how much do you use the vocational training you received in high school or area vocational center?" (Bice & Brown, 1973). Typically more than half of the respondents report they are using their training in their job. They may not, however, be referring to the occupationally specific component of their training when they report using their training. A more rigorous way of measuring training related placement is to match a worker's current occupation against his/her field of training. By this definition, only 27.4 percent of the employed graduates had a training-related job (very broadly defined) 1-10 years after graduation in the 1983 National Longitudinal Survey of Youth. Only 21 percent of employed vocational graduates had a training-related job two years after high school graduation in High School and Beyond data (Campbell et al., 1986). Felstehausen's (1973) study of 1971 vocational graduates in the State of Illinois found training-related placement rates of 27 percent in business occupations, 17 percent in trade and industry, 52 percent in health, and 20 percent in agriculture. Conroy and Diamond's study (1976) of Massachusetts graduates obtained a training-related placement rate of 29 percent for business and 37 percent for trades and industry.

In contrast, 6 months after passing a German apprenticeship examination, 68 percent of those with civilian jobs were employed in the occupation for which they were trained (much more narrowly defined) (the Federal Institute for Vocational Training, 1986). The U.S. rate of training-related placement might have been somewhat higher if measured 6 months after high school graduation but if the German definitions of relatedness had been applied to the U.S. data, the training-related placement rate would have been even lower. High unemployment rates no doubt contribute to the low rates of training-related placement in the U.S. However, aggregate unemployment rates are now equally high in Germany so the differential between the countries in training-related placement cannot be attributed to differentials in the general tightness of labor markets.

The primary reason for the lower training-related placement rate in the U.S. is the limited employer involvement in the training. Mangum and Ball (1986) have found that employer-controlled training institutions have much higher training-related placement rates. Using a procedure of matching training fields against jobs, they found that the proportion of male graduates that had at least one job in a related field was 85 percent for company training, 71 percent for apprenticeship, 52 percent for vocational-technical institutes, 22 percent for proprietary business colleges, and 47 percent for military trainees who completed their tour of duty. The rates for females were 82 percent for company training, 59 percent for nursing schools, 61 percent for vocational-technical institutes, 55 percent for proprietary business colleges, and 49 percent for military training.

How Large Are the Benefits of High School Vocational Education and What Causes Them?

Should we care whether students who pursue occupationally specific training during high school find jobs in the field for which they were trained? On the face of it, it would seem wasteful to train young people to do x, and then have them take a job in another field. Yet some of the leading experts on vocational education argue that the focus on training related placement rates is misplaced. According to Harry Silberman (1982), the primary purpose of secondary vocational education is:

> **to promote full human development through exposure of the learner to work experience as part of the education process. . . . The purpose of the work is to further the education of the student; the work is subordinate to the educational process; it is work for education.** (p. 299)

If this goal were being achieved, we would expect vocational students to benefit from their vocational education regardless of whether they find a job in the field for which they are trained. Sadly, however, there is no evidence that high school vocational education benefits its clients--the students who take occupational courses and the employers who hire them--when the student takes a job unrelated to the occupation for which training was received. In fact, there is considerable evidence that the students who take vocational courses do not benefit economically from the training if their job is in an unrelated field. This has been demonstrated by the work of Campbell et al. (1986) which has been summarized in Tables 5 and 6. The regressions from which these results are taken control for the following: sex, minority status, handicaps, limited English proficiency, test scores, grade point average, family background, attitudes, absenteeism, discipline problems, deportment, past and current college attendance, employment during high school, aspirations in 8th grade, region, and rural/urban location. The analysis of HSB also controlled for presence of a spouse and child.

Table 5 presents estimates of the impact of high school vocational education on labor force participation and the employment rate (probability of employment conditional on labor force participation). Relative to general track students, vocational concentrators have a 3.6 percentage point higher labor

TABLE 5

IMPACT OF VOCATIONAL EDUCATION ON EMPLOYMENT

(Percentage Point Effects)

	National Longitudinal Survey Data	
	% Time in Labor Force	% Employment/Labor Force
Concentrator	3.6*** (2.87)	4.1*** (4.18)
Limited concentrators	2.3* (2.20)	1.6* (1.93)
Concentrators explorer	1.4 (1.08)	3.4*** (3.43)
Self report vocational	.1 (.09)	2.5* (1.87)
Self report academic	1.7 (1.28)	1.6 (1.51)
Academic	-3.7*** (3.23)	-.7 (.76)
R^2	.162	.126
Number of observations	6953	809
Mean of dependent Variable	74.5	85

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	High School and Beyond Data			
	% Time in Labor Force		% Employment/Labor Force	
	Training Related	Not Training Related	Training Related	Not Training Related
Concentrator	9.6*** (4.6)	2.3 (1.62)	3.3** (1.96)	.6 (.53)
Limited concentrator	11.5*** (5.07)	1.8 (1.54)	2.7* (1.70)	-1.1 (1.25)
Concentrator explorer	6.4** (2.02)	-1.2 (.84)	1.9 (.86)	-1.1 (1.02)
Self report vocational	3.0* (1.74)		.1 (.07)	
Self report academic	0.8 (.31)		-2.0 (.98)	
Transcript defined academic	-4.3*** (3.01)		-.6 .57	
R^2	.127		.067	
Number of Observations	6098		5414	
Mean of Dependent Variable	47.1		92.3	

Source: Table 14 of Campbell, Basinger, Dauner, and Parks, Outcomes of Vocational Education for Women Minorities, the Handicapped and the Poor. All equations controlled for sex, minority status, handicapped, limited English proficient, socio-economic status, region, rural urban location, test scores, current enrollment, post secondary education, employment during high school and grade point average. The HSB models contain additional controls for presence of a spouse or child, aspirations in 8th grade, attitudes, absenteeism and discipline problems.

force participation and a 4.1 point higher employment rate in NLS data. Limited concentrators and concentrator explorers are somewhat less well off. The analysis of High School and Beyond data examines whether the employment impacts of vocational education depend on wanting (or being able to find) a training related job. Vocational graduates were divided into two groups: those whose present or most recent job was training related and those whose job was not training related.

The concentrators and limited concentrators in the training related category had a 2.7-3.3 percentage points higher employment rate. Vocational graduates working outside their field of training often had lower employment rates than those who took a general curriculum in high school. The association between training relatedness and the labor force participation rate is particularly strong. Concentrators and limited concentrators working in related jobs had a 9.6-11.5 percentage point higher probability of being in the labor force than the high school graduates who took a general program.[5] Those working in an unrelated job had only a 1.8 to 2.3 point higher labor force participation rate.

In Table 6 we examine the effect of vocational education on wages. High school graduates who took a vocational concentration obtain significantly higher wage rates and higher monthly earnings only when their job is related to their training. When their job is not related to their training, they do not receive higher wage rates than students who have pursued an academic or general program of study in high school.

High training related placement rates are also important because vocationally trained workers are more productive and less costly to train than other workers doing the same job only when the job is related to their training. The evidence for this statement comes from statistical comparisons of two workers doing the same job. The results are presented in Table 7, which has been summarized from Bishop (1982). Compared to those without vocational training, new hires who have received school-provided vocational training that is relevant to their job required 7 percent less training while those with training not relevant to their job required 6 percent more. Those with relevant training were 4 percent more productive in the first two weeks, and 6 percent more productive during the next 10 weeks and 6.6 percent more productive after a year or so at the firm. Those with non-relevant vocational training were less productive initially and insignificantly 1.4 percent more productive after a year at the firm.

These findings imply that the private and social benefits of vocational education derive from the occupationally specific skills that are developed. Some of the skills taught in vocational classes are transferable--useful in a great variety of occupations--but skills taught in nonvocational classes are transferable as well. Vocational classes are no better at instilling valuable transferable skills than nonvocational classes. In other words, vocational education as now practiced is not a better way of preparing youth for generic jobs than more academic forms of education. Those who justify vocational education as an alternative method of teaching transferable skills are describing an educational program that probably exists in only a few schools. From my observation of vocational classrooms and conversations with vocational teachers, the present day reality is that outside of the career exploration and principles of technology courses the vocational teachers are concentrating on occupationally

TABLE 6

IMPACT OF HIGH SCHOOL VOCATIONAL EDUCATION BY TRAINING RELATEDNESS OF JOB

(Percent Difference from General Curriculum)

Variables	Hourly Wage		Monthly Earnings	
	TR	NTR	TR	NTR
High School Beyond Data				
Concentrator	9.8***	.8	9.8**	5.8**
	(3.77)	(.49)	(2.44)	(2.25)
Limited concentrator	8.5***	.2	10.1***	.1
	(3.37)	(.17)	(2.62)	(.05)
Concentrator explorer	9.0***	-.4	1.08**	2.3
	(2.57)	(.26)	(2.01)	(.93)
Self report vocational	3.6*		3.2	
	(1.76)		(1.03)	
Self report academic	2.8		1.8	
	(.85)		(.36)	
Transcript defined academic	-1.2		-4.5*	
	(.71)		(1.69)	
R^2	.103		.232	
National Longitudinal Survey Youth Cohort				
Concentrator	8.1***	-2.8	17.2**	-1.4
	(2.85)	(1.31)	(3.98)	(.44)
Limited concentrator	5.3**	-1.0	8.2**	-2.6
	(1.97)	(.59)	(2.03)	(.99)
Concentrator explorer	.3	2.3	4.9	-.1
	(.07)	(1.10)	(.84)	(.02)
Self report vocational	1.8*		2.6	
	(.68)		(.67)	
Self report academic	2.2		3.5	
	(1.08)		(1.14)	
Transcript defined academic	-.6		-3.8*	
	(.35)		(1.46)	
R^2	.275		.336	

Source: Table 16 of Campbell, Basinger, Dauner, and Parks, Outcomes of Vocational Education for Minorities, the Handicapped and the Poor. Coefficients from regressions predicting the log of the hourly wage rate and the log of monthly earnings have been multiplied by 100 to approximate percentage impacts. The regressions included controls for the following: sex, minority status, handicaps, limited English proficiency, test scores, grade point average, family background, attitudes, absenteeism discipline problems, deportment, past and current college attendance, employment during high school, aspirations in 8th grade, region, rural/urban, occupation, and post school work experience.

TABLE 7

IMPACT OF VOCATIONAL EDUCATION (AT ALL LEVELS) ON TRAINING COSTS AND PRODUCTIVITY

(in percent)

Variable	Received Vocational Training in a School	
	Relevant to Job	Not Relevant to Job
Training time	-7.3	6.3
Productivity		
in first 2 weeks	8.6**	-3.0
in next 10 weeks	6.1**	-.5
Current or most recent	6.6***	1.4

**Impact of relevant vocational education is significantly larger than the impact of non-relevant vocational eduation at the .05 level (two-tail test)

***Impact of relevant vocational education is significantly higher at the .01 level (two-tail test)

Source: Table 5 of Bishop The Social Payoff from Occupationally Specific Training. High school vocational graduates account for only about 30 percent of the vocationally trained workers in the sample. Most of the rest received their training at a 2-year postsecondary institution.

specific skills even when many of their students have no desire or realistic chance of getting a job in the field. What, if anything, should be done about this?

Some have proposed eliminating occupationally specific programs from the high school and telling students to get occupationally specific training at a postsecondary institution. However, many of those being served by high school vocational education have no desire to spend another one or two years in school. Postsecondary vocational programs also have their own problems--very high dropout rates and unimpressive training-related placement rates (better than those for secondary vocational education to be sure but not in any way satisfactory)(Mangum & Ball, 1986).

The solution is to attack the training-related placement problem head on. Training-related placement rates should remain as one of the key evaluation yardsticks for vocational education. One of the key objectives of any program of reform of high school vocational education should be an increase in the share of its graduates who get and stay in training-related jobs. To accomplish this objective, the following reforms are recommended:

-- Students should not be allowed to overspecialize. Vocational programs should be for broad occupational areas such as electronics rather than in narrow fields such as robotics. The goal of broad occupational training should not be achieved by diluting what is taught. With respect to the pace of instruction and time on task, most vocational classrooms are similar to academic classrooms. A great deal of time is wasted. Much more could be accomplished if standards were raised.

-- The strength of a student's commitment to a particular occupation should be an important consideration in choosing which students are admitted to programs for which there is excess demand. Programs which have high placement rates and excess demand should be expanded and teachers should be compensated for taking extra students.

-- Coop placements during summers and senior year should be a part of every vocational student's program. This would both increase rates of training-related placement and force the contraction of programs for which there is little employer demand. The primary reason for this suggestion is the belief that work habits and some occupation specific skills are better taught in the context of an actual job.

-- Vocational teachers should be expected to keep in touch with their former students over the phone. They should keep records of each student's employer, future plans, a detailed description of the student's job and of the skills taught in school that are being used on the job (matched against the student's competency profile). During these conversations the teacher could ask for suggestions about what should be added to and/or dropped from the curriculum. These conversations would identify which graduates need assistance in finding training-related jobs and might also yield job leads for new coop placements and for other graduates.

- -- Teachers should assist their students, current graduates, and past graduates to find training related jobs. Their success in this area should be evaluated and they should be rewarded for success. (They might receive $100 for each time they find a training related job for a graduate and $100 for each year beyond the first year the student stays in that job.)

One of the causes of the poor fit between occupational plans and occupational enrollment choices is the practice of recruiting or assigning students to occupational programs in order to achieve state mandated enrollment targets. Teachers in need of bodies to meet the target are willing to accept and sometimes actively recruit into their program students who they know do not want or have only a low probability of getting a job in the field. State reimbursement of the costs of occupational education should not be keyed solely to October enrollments. A formula should be devised which gives June completions, senior year coop job placements, and training-related placements of graduates weight rather than October enrollments. Completion rates and placement rates should be adjusted for the capabilities of the students and local unemployment rates. Florida and South Carolina currently include the training-related placement rate in their reimbursement formulas.

Occupational (as distinct from exploratory) vocational courses should not be treated as just another of a student's course options. Students should be allowed to take these courses only when:

- -- he or she has participated in a systematic career selection program and discussed the choice with a guidance counselor
- -- the student has had a part-time job in the field or has interviewed and shadowed people who work in the field
- -- parents and the student have had at least 2 conferences with a guidance counselor on the subject of career choice
- -- a "contract" has been signed between students, parents, vocational teacher, the school, and employer representatives. The student would promise to complete a certain amount of training in the field and achieve a particular standard. The school and employer representatives would promise to find the student a training-related coop placement for the senior year if the student fullfills his or her part of the bargain.

Where Are Occupationally Specific Skills Best Learned?

A strong case can be made that the occupationally specific skills that many high school vocational programs are trying to teach in a lab or shop setting are best learned on a job. Work habits are also best learned on a job. Evidence of the great value of on-the-job learning comes from the great success of the German apprenticeship system and from longitudinal studies of American youth. Students who worked while in high school are generally much more successful in the labor market than those who did not hold down a job. Figure 1 summarizes the results of one such study by Kang and Bishop (1984).

Holding a job during the summer between junior and senior year had large effects on wages, employment, and earnings. For boys, 30 hours of work per week during the summer between junior and senior years led to 8 percent higher wage rates, 12.5 percent more employment, and 11 percent higher earnings in the period immediately following high school. An equivalent total number of hours worked during the senior year (i.e., averaging 10 hours a week) raised the wage rate of boys by 1.5 percent, employment by 3 percent, and earnings by 8 percent. Holding a job during junior year in high school had practically no effect on labor market success after school. The wage rates of girls were not affected by whether they worked during the summer or during the school year. There were employment and earnings effects, however, which were larger for summer than for during-year work.

The strongest effects of work experience in high school appear right after graduation and the first two years after (Kang, 1984). Their magnitude and importance diminish over time. Those who worked 10 hours per week through the last two years in high school, for example, earned 8 to 20 percent more in the first three months after graduation than the students with no work experience in high school. But this relative advantage declined to about 5 percent during the sixteenth through twenty-first month after graduation.

Are these labor market benefits bought at the expense of any undesirable effects of having a job while in school? A good way to isolate the effect of work is to examine its effects on changes in test scores, GPA, deportment, and educational plans between sophomore and senior year. This was done with the High School and Beyond survey. The effects that were found are summarized in Table 8. Work did not have effects on internal locus of control, self-esteem, work orientation, or planned occupation.

Working during the junior year had small negative effects on test scores, grades, and aspirations. Working during the summer also had somewhat smaller negative effects, on test scores (particularly verbal scores) but not on aspirations. In contrast, working during the senior year had no effects except very small negative ones on verbal scores and on planned years of education.

Working during senior year had minimal effects on test scores and on educational plans. These, when combined with the very large positive effects on the employability of graduates who did not go to college, imply that students who are not planning full-time college attendance should be encouraged to get part-time employment during their senior year. The clear indication is that such experience helps them prepare for full-time entry into the labor market.

The implication of these results for vocational education is that cooperative education should be greatly expanded. For a fuller description of the

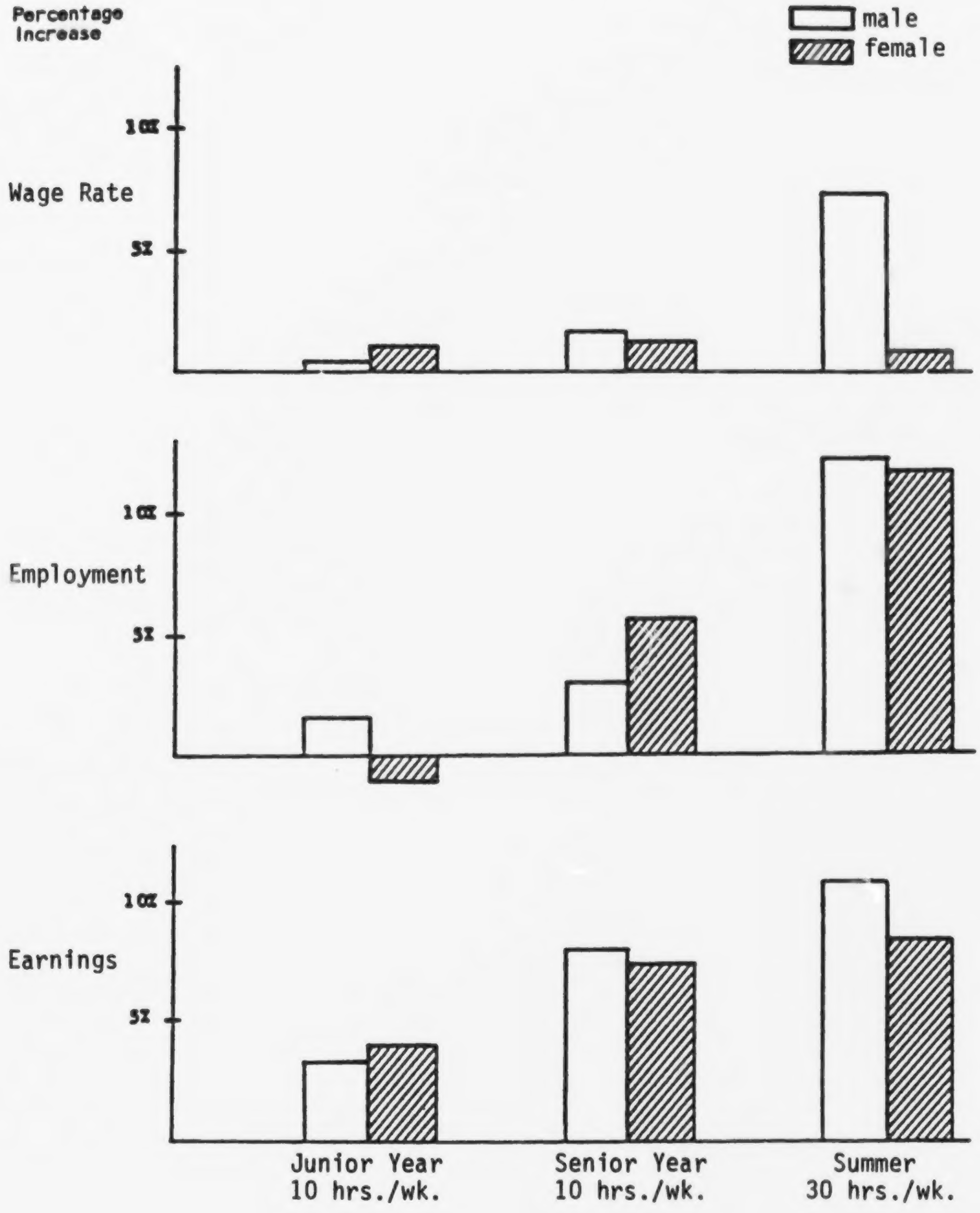

Figure 1. Effects of work during high school on labor market success in the two-year period after graduation.

TABLE 8

EFFECT OF WORK DURING HIGH SCHOOL ON CHANGES IN ACHIEVEMENT, ATTITUDES AND ASPIRATIONS
Standard Deviation

		Average Hours per Week		
		During School		Summer
		Junior	Senior	
		10 hrs./wk.	10 hrs./wk.	30 hrs./wk.
Verbal test score	M	-4***	1**	-6***
	F	-3***	0	-4***
Math test score	M	-4***	0	-3*
	F	-3***	-1	-3*
Science test score	M	-4***	0	-2
	F	-1	-1	-2
Civics test score	M	-3***	1	-5*
	F	-2	-1	-1
Grade point average (SD=.7)	M	-4***	1	-5*
	F	-4***	1	1
Good deportment	M	-4***	0	-3
	F	-3*	1	1
Planned yrs. of schooling (SD=2.5 yrs.)	M	-3***	0	-5
	F	-2**	-2**	1

NOTE: Entries are coefficients scaled approximately as a percentage of the population standard deviation of the outcome being studied. For the test scores a one standard deviation improvement is roughly equivalent to a gain of three grade equivalents or a 110 point improvement on an SAT test. A one standard deviation improvement would cause an individual to move from the 50th to the 84th percentile on the characteristic, so impacts on percentile rank in class for grades or deportment can be calculated by dividing the coefficient by 3. The dependent variable was the change between the end of sophomore and senior years. The models used to derive these estimates contained a total of 75 control variables. Included among the control variables were the sophomore values on 10 other outcome measures, dummies for a great variety of specific courses, years of courses in specific subjects taken during freshman and sophomore year and during junior and senior year, family background, self-assessed ability to succeed in college and parental pressure to attend college. The models employed a first difference specification.

*Statistically significant at the 95 percent level.
**Statistically significant at the 99 percent level.
***Statistically significant at the 99.9 percent level.

rationale of coop education (Ruff et al., 1982; Lewis & Fraser, 1982; Barton, 1981), my specific recommendations are the following:

- -- All vocational students who achieve a minimum performance standard by the end of their junior year should be placed in a cooperative job related to their training during summers and the senior year.
- -- In order to insure that the student has enough time to complete a strong program in the basics, release time from school for a coop job should not exceed one-third of the school day, except in extraordinary circumstances.
- -- The minimum performance standard should be set at a level such that (a) at least 80 percent of entrants in the junior year can expect to attain the standard and (b) all students who meet these standards can get and keep a coop job.
- -- Handicapped students would have their own individualized performance standard.
- -- Students who do not meet the standard would be dropped from the program unless they found a job on their own that was related to their training.

There will be no difficulty finding coop placements for distributive education students. There may, however, be difficulties in placing clerical, health, trades, and technical students. In order to help place these students and insure that the jobs really offer training, coop staff should facilitate applications for waivers which allow coop students to be paid 75 percent of the minimum wage. The training costs in these jobs are significant and the lower wage during the training period is quite justified. In Germany, first year apprentices are generally paid only one fourth of what they will make when the apprenticeship is completed. Paying below the minimum wage in the training slots is also desirable because it insures that the students are in the program because of the opportunities to learn a skill rather than just to earn money and get out of school.

Employers who train handicapped and disadvantaged youth are eligible for targeted jobs tax credits. The coop coordinator should aggressively market these tax credits as a way to induce employers to train the students who are most difficult to place.

A comprehensive list of competencies would be developed for each broad occupational category. The teacher and the employer advisory committee would decide which of these competencies need to be taught during junior year, which are best taught on a job during the summer between junior and senior year or during the senior year, and which are best taught at school during senior year. The coop contract would specify the competencies the employer is to teach. The student would receive a competency profile checklist at the beginning of the program and the competencies developed would be recorded on this document as they are learned. The competency profile also serves as a credential that assists in the placement of students in jobs and further training.

Summary

Until new evidence of unique educational effects of vocational education is produced the primary justification of occupationally specific education in high school must remain an economic one. It must make the students better off economically. Making the vocational students no worse off is not good enough. If the economic effects of taking academic and occupational courses in high school were equal, the public would probably want to substitute academic for occupational coursework. Their preference for the academic has a rational base:

- -- they are less costly to teach (because class sizes are larger and space and equipment needs smaller)
- -- employers expect to teach occupational skills to new hires who have not received training in high school but they are unlikely to teach basic skills to their employees
- -- academic coursework is better preparation for college than occupational coursework so choosing an occupational curriculum inevitably reduces the ability of the student to change his/her mind about college and later go for a B.A.
- -- the public's educational goals are in part cultural and political and nonvocational courses make greater contributions to these goals.
- -- basic skills do not become obsolescent while occupational skills do.

To achieve its economic potential occupationally specific education in high school must get serious about raising the rates of training-related placement. Entry into these courses should be limited to those serious about pursuing the occupation, and teachers and programs need to be evaluated on the basis of their ability to achieve high rates of placement in related jobs.

The teacher would no longer be the sole instructor for occupation specific skills. The coop employer might in fact become the primary instructor for occupation specific skills. The teacher's role would become one of mentor and facilitator of learning and job placement.

FOOTNOTES

1. Basic skills time was defined as the use of reading, mathematics, and both oral and written communication skills by students in a vocational class. Examples were reading, writing, speaking, or calculating in conjunction with technical skills.

2. These courses were selected from a more complete list of courses to represent math and science coursework generally taken during or after the sophomore year in high school.

3. Estimates of impact in terms of grade equivalents were made making the conservative assumption that at the 12th grade one standard deviation on the HSB tests was equivalent to 3 grade equivalents.

4. The 19 other school characteristics in the model were control (Catholic, other private vs. public), bussing, court orders, unionization, teacher strikes, facilities, whether the last school levy passed, teacher student ratio, ratio of teacher's aides to teachers, percent of teachers with MA or Ph.D. or with more than 10 years of experience, teacher absences, entry pay, school participation in upward bound and coop ed, competency test, ability grouping, average daily attendance, school deportment index, school problem index based on principal reports, school mean of sophomore reports of school quality index, school mean of student school rating index, and number of class hours per year.

5. One has to be in the labor force at least a week or so to be in a training-related job, so the association between the two reflects both directions of causation.

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Highlights of Discussion Following Bishop's Presentation

Swanson: You (Bishop) have noted a significant difference in schools, as Silberman has done. You've been telling us that excellence is defined better by achievement than by curriculum or courses chosen. You have not advocated a single mainstream curriculum. One point of difference between Bishop's paper and the other papers presented here has to do with whether it is actually possible in America to have a single mainstream curriculum that accommodates all students and all kinds of goals that people have. I think we have talked about desirability without really confronting its feasibility.

Mjolsness: I believe we need to be introspective. We do need to use feedback, and we need to relate what we can learn about what's happening. We have to be careful, though, in generalizing. The Minnesota model of secondary vocational education differs from that of the nation and that of places like Texas and North Carolina.

I believe we need to have a better system of orienting kids to types of occupations. We need to use a variety of experience, such as work experience. Information is necessary for wise decision-making, and children today do lack the opportunity for work experience. I believe a dichotomous system of vocational versus academic is damaging. To eliminate advocacy for vocational education tends to also cause the system to suffer. In this state, we've had a great amount of fragmentation in the last few years that's been damaging to any kind of occupational education. I don't believe in early specialization, but we must give students some experiences to reach that point. We have advanced the idea of entry and exit and of education throughout our lives. There is a readiness. I don't know if there's a magic age . . . have to look at it individually.

A Note About These Highlights

This is an excerpted transcription of the discussion following the summary of this paper. We have excerpted what we believe is a representation of the variety and diversity of ideas expressed in the discussion. In some instances we have taken some liberties in order to make sentences complete and to fill in words which are unintelligible on the tape due to coughing, laughter, or other types of sounds which tape recorders seem to adore. Participants have had the opportunity to review the comments presented here.

The organizations represented around here are mostly college-oriented. I worry a bit about the school where I work--where all the faculty are college educated, where all the board members are college educated--that we can have an unbiased view towards the total educational plan for all children. We can't neglect the idea of occupational training. Economic utility is one test of occupationally specific education, but it is pretty limiting when you think of the life roles. We need to do a better job of using occupationally specific skills as a vehicle to get students interested in English, math, or communications. Regarding efficiency versus effectiveness, I still believe that formal education is much more efficient when a variety of occupational skills are taught.

Szambelan: The recommendations you (Bishop) came up with disagree with the basic assumptions of this symposium and falsify the experience I've had with hiring people. Vocational education people talk as if the student makes a choice and is stuck in it, but my experience says, "No, that's not true." We need the opportunity to make a lot of decisions along the way, and our perceptions of success change. There are a lot of opportunities to take advantage of what's out there. Companies allow a lot of options for people who come to work for them. There isn't any law that says you need to take college as soon as you get out of high school. All of my education was paid for by companies I've worked for. I think that's a big advantage that we don't stress enough.

I feel like I've dropped into an alien planet when I hear the way vocational educators talk about getting people to value what they do. In training programs provided by business and industry, the way we get value is we go to top management and clientele to get their input. We get a lot of involvement. I've heard a couple times today, "No, we don't talk to leaders in industry to get their opinion." I suggest that that certainly would be a way to get some valuing for the product you're presenting. I suggest that people who are doing that type of training (occupationally specific) need to make sure that the training person uses the same skills that we use in our academic subjects. Make them read, make them write in the course. From my experience it seems that some of the teachers who teach vocational education are real uncomfortable judging someone else's writing. They need to be more well-rounded people. No one told me how to write a memo, to make it clear, terse, effective. No one told me how to write a proposal. That's very important, but it's apparently peripheral to your (Bishop's) proposal.

Bishop: Education and learning requires some continuity and in the kinds of jobs we have for vocational students--one month here and one month there--it's very hard to learn in such an irregular environment and without long-term relationships. I'd like to see coop education move in that direction (similar to the German system with an apprenticeship program with mentors), but it's got a long way to go.

Mjolsness: We hear often how we should adopt the European or the Japanese models. We have to look at the values we hold, too. This is a democratic system which is very diverse. Somehow the idea and the practical both have to be addressed. We're creating a myth, we said, when we believe that every child ought to get a college degree and will find work as a result of that education. So, how do we consider the value system that undergirds other societies?

Bishop: You can never take another system and put it lock, stock, and barrel in another society, but you can see some principles of what is a successful approach in another situation and see the impact of very different systems.

Silberman: If we did what you (Bishop) advocate, would there eventually be a tendency to exclude college-bound students or else the hard-to-employ students--those who might bring down placement rates? What's to prevent middle-level creaming?

Bishop: I think that would be a tendency. I envision occupationally specific training as changing the nature of instruction by placing a demand on the teachers--to make sure they have contacts in the community. On the other hand, the teacher has to be given some authority over who gets in. You'd have to have some special handling of the handicapped, and you'd have to set up something for other disadvantaged groups. . . . Is an imperfect measure better than having no accountability?

CHAPTER VII

Making Vocational Education Better for Students

The overriding purpose of the symposium described in this report was to address the question, "How can we make vocational education better for secondary school students?" The content of the commissioned papers and the comments by discussants already provide a rich array of suggestions for making vocational education better. What follows is a summary of the ideas expressed by symposium participants during discussion periods and on written forms. An analysis of these discussion transcripts and written forms revealed several major themes about how to make vocational education programs better for students. These themes are used as organizers for this chapter.

Say Something Now--and Make It Good

From symposium participants' comments, it was apparent that vocational education as a part of secondary education is in the midst of turmoil. An implication was that vocational education would be better for students if vocational education leaders, in consort with educational leaders more generally, would *say something immediately* about the desired future direction of vocational education in secondary schools. This theme had a sense of urgency and an openness to the possibility of major changes in the structure and practice of vocational education.

Realize that the need is urgent. Participants communicated a feeling of frustration in not having readily available a clear position statement on vocational education--a position statement which has consensus within vocational education and among the larger educational community and the general public. Underlying the sense of "now or never" was a fear that vocational education at the secondary level might not survive if it does not re-vise itself in light of changes occurring in the public schools. Participant views communicating this perspective were as follows:

> It's an immediate problem. We can't discuss it philosophically here for a long time. . . . We're losing a lot every day.
>
> Our problems are now and tomorrow. . . . This is critical for the next legislative session.
>
> The programs are disappearing fast.
>
> We need to deal with this before it does it *to* us.

> It is now time to act. Figure out a power base . . . and get on with it.
>
> Unless a significant (power) base is established, vocational education, as we know it, will not exist in two years or less. . . . We are dropping behind fast.

Realize that changes might be necessary. Comments such as the following stimulated consideration of change: (1) education involves the willingness to make "enough mistakes" and take "enough risks," (2) vocational education must guard against becoming stagnant, and (3) the existing structure of vocational education is out-of-touch with immediate circumstances in Minnesota's high schools. Among many symposium participants there was a readiness and desire for ideas to make vocational education better--even if they entailed major changes. Discussion slipped back and forth from considering evolutionary changes to total revolution or reconstruction in secondary level vocational education. The tactic of making evolutionary changes by using democratic processes was described as being slow because it involved the "public owning and participating in the school." From this perspective, it seemed necessary to first "determine how we're going to get people together and how we're going to organize our decision-making structure." In contrast, other participants called for a much more dramatic and immediate re-vision--a belief that nothing short of a revolution in the entire educational system would bring about long-term improvements in vocational education. While the possibilities raised by such visions were entertained with both caution and interest, most participants seemed to consider total reform unlikely. Thus, the bulk of discussions and comments centered on what were thought to be feasible ideas for improvements within an existing system unlikely to change either dramatically or quickly.

Standing back from interactions related to this theme, one is struck with the perplexing dilemma facing vocational education at this time. On the one hand, there is a press for an immediate response to the condition and direction of vocational education in the context of major reforms occurring in secondary education. On the other hand, we face the realization that the major changes we need to make in vocational education require considerable time to think about and talk out amongst ourselves and others. The challenge is threefold: to articulate responsible, creative, and possibly revolutionary changes in vocational education; to employ democratic processes in arriving at these changes; and to accomplish this immediately.

Re-Vise the Meaning of Vocational Education

A theme reiterated during the symposium was the question of definition or meaning held for the concept of vocational education--particularly in the context of the secondary school. The idea of re-vision, of seeing again, of reviewing the options seemed to especially characterize the shared thoughts and questioning about the meaning of vocational education. It was not as if participants did not know the publicly stated purpose of vocational education, since most were selected for their knowledge of or interest in vocational education, but that they were no longer as clear as they thought they had been or that they couldn't focus and explain as clearly as they wanted to. Participants said we need to "strive for greater consistency among current vocational education programs about what the term 'vocational education' means." This discussion about meaning also provoked a re-kindling of the spirit of career education and how the possible re-visions of vocational education being considered were the same as or different from the career education movement of 10 to 15 years ago.

The call for re-vision of meaning included discussions about the need to (1) clarify directions for planning and action, (2) resolve the issue of the role of specific job training in vocational education, (3) decide who should be served, (4) examine the values underlying the mission, (5) listen to the viewpoints of those outside of vocational education, and (6) select language to garner power.

Clarify the direction. A clearer vision of vocational education, it was implied, would provide direction for revision in the structure and strategy of secondary vocational education. Presumably, a clear vision of meaning would enhance the consistency and coherence in planning and action. Further, a clearer vision would guide the collection of data useful for demonstrating vocational education's accountability. However, there was some pessimism expressed about whether or not the field would take the necessary time for conversation among special interests in vocational education to obtain the power of consensus which seemed to have been lost. This concern was particularly worrisome in light of the already acknowledged sense of urgency for proposing a revision in policy and practice. The point was made as follows:

> We need a clear vision for vocational education arrived at by sorting out all the multiple interests that need to be represented, to spend the time that consensus and trust-building requires. We need to take the time needed to understand every word in the mission statement about vocational education. . . . We haven't taken time for that piece.

The tension with time is also apparent in the following statement:

> We need to agree upon a direction for secondary vocational education . . . and decide on strategies to take us to where we want to be. It is now time to act.

Decide who should be served. The question of who should be served by vocational education in the secondary school was raised throughout the symposium. The answer seems fundamental to the re-vision of meaning, yet consensus still has not been reached. Should it serve the needs of a special set of students, or should it serve the needs of all students? Does it actually enhance or diminish the quality of education experienced by all students in the high school? Favoring vocational education for all students, one participant who said she was playing the "devil's advocate" put it this way:

> There is the assumption operating in educational circles that there are kids who cannot learn things schools most want to teach. Often we can tell who these kids are by the end of the first grade. But we have a democratic ideology, we're not going to push them out into the street or into a

> different institution all together. So, we need to provide some program that can permit those kids to stay in or if they drop out at least we can say, hey, we tried--we have this appropriate program available (vocational education). . . . This is a dominant, driving force, which no one articulates because it's a disgusting thing.

In contrast, one participant expressed the belief that vocational education provides another chance for some students to achieve.

> The question today is whether it is better to be at the bottom of the academic track or better to be at the top of some other track that has given some motivation or encouragement of whatever you do well. Maybe the description of excellence isn't in the courses you take but in the achievement you make --wherever you are.

The question remains, who are we going to serve and on what basis should we decide?

Examine the values underlying the mission. Another dimension of the symposium discussion underscored the idea that care must be taken in being clear about the values which would be used to shape a different meaning for vocational education. Must they be the same values that bring a return of the basics to the forefront of educational concern today? Or, are there other values that justify vocational education in its own right and in a context larger than "academic" education--values such as democracy, equity, and the practical. One perspective was that perhaps vocational education should give up, as a lost cause, trying to convince the "academic elite" about the value of vocational education. Pursuing this cause too vigorously might result in losing sight of what vocational education stands for in terms of learner outcomes and needs of students being served. In reality, pursuing this cause could result in changing vocational education for the wrong reasons or for reasons that are already served by other components of the educational system. On the other hand, to deny the values justifying academic education in considering the meaning of vocational education might, in the long run, be to contribute to the problem rather than the solution. That is, it might result in tracking of learners in ways that are ultimately to their disadvantage (and that of their children) while in the short run seeming to reflect a notion of compassion for the disadvantaged and actual short term gains in typical measures of educational success.

Resolve the issue of specific job training. The issue of the extent to which vocational education in the secondary school should provide specific, entry-level job training was heatedly debated at one point in the symposium. Urging less emphasis on specific job training, one participant argued,

> If we recognize the continuing, lifetime-learning notion, then to say there's something called "terminal" secondary vocational education in the year 2000 is silly. But, on the other hand, if we agree that in order for people to discover what it is they can do better than average, where their

> skills are, that they have to be exposed to occupations and processes while they're being prepared for postsecondary vocational education, it becomes a lot clearer. . . . The track we're in is that in the last eight years we've been chasing the Labor Department around, because that's where the dollars were. We began to confuse ourselves and policy makers on manpower training as vocational education--until it got so blurred that we, ourselves, don't know the difference. . . . (There is) a subtle but profound difference. . . . All specific training is training, not education.

In contrast, other participants noted,

> You can make a case for kids who "stopout" to work, to earn money, that vocational education skills give them some competitive advantage in a restricted labor market.
>
> One-third of high school graduates one year after graduation are working (not in school). What do we do for them? The contribution that vocational education does make to the secondary education system is to prepare students to enter the kinds of jobs that are available for them (out of high school) while in high school for those who choose that option.

Discussion of this concern begs the issue of meaning of vocational education. As one participant blurted out with a sense of frustration, "What are the assumptions about what secondary vocational education brings to the (educational) system that others don't if it isn't preparation for employment?" One response was that secondary vocational education "is preparing people for work, not a job."

Listen to the viewpoints of others about our mission. A salient point of advice to vocational educators concerned the need to include those outside of vocational education in discussions about the meaning and direction of vocational education. Stated in jarring eloquence,

> Stop being so defensive and paranoid about your profession and recognize in large part that you (vocational education) have brought on your own problems. Vocational education has set itself apart from the mainstream by receiving extra funding, having smaller class sizes and larger blocks of teaching time, extended work years for teachers, and in general, more of the "goodies" than other aspects of education (with the exception of special education). If you feel you've accomplished more, perhaps you should have been expected to! No wonder there is somewhat of a resentment on the part of general academicians and somewhat of a reluctance to team up in providing "vocational education" on a broader scope. The future of vocational education (whatever that means) probably lies in the ability of vocational education to influence not just school boards, kids, and parents, but

> **more importantly, the ability to enlist that team effort with your fellow teachers in all disciplines!**

Select language to garner power. The dilemma of developing a meaning for vocational education which is unique and special, yet one that interprets vocational education as part of the rest of education, is especially challenging. Participants suggested that it is important to use the language of the group in power positions to explain and rationalize vocational education. One participant explained how this could be done:

> **General Eisenhower taught us that national defense meant creating the National Defense Education Act, a forerunner of everything we're involved in. Eisenhower believed that you cannot have national defense without an educated people--the National Defense Highway Act, National Defense Housing Act, and National Defense Health Act. National defense meant more than weapons. If you are going to deal with national defense, how are you going to avoid needing vocational education? We aren't being "articulate" in a lot of areas. Economic development--relate it to the need for vocational education. Import issues and tariffs issues--relate them to the need for vocational education.**

Another participant reminded us of a special obligation of those from the working class who make it into power positions. That obligation involves identifying the language and arguments that can be used to make a difference in garnering a fair share of resources for those programs that especially serve the working class.

It is inescapable that there must be shared meaning for the concept of vocational education before progress can be made in improving vocational education. Presentations and discussions at the symposium would suggest that further clarification of the meaning of vocational education in the secondary school is of high priority at this time for those both inside and outside of vocational education.

Consider Restructuring Vocational Education

Altering the structures which affect the practice of vocational education is seen as one of the major ways to improve vocational education. Participants at the symposium presented ideas about changing the structures imposed by the Minnesota Department of Education, the structures operating within school districts and between levels of the educational system, and the structures promoted by vocational education within secondary schools.

Shift to bottom-up decisionmaking. Some of the symposium participants called for a shift from what they perceived to be a top-down management system to one in which more decisions are made at a local grass-roots level rather than by personnel in the Minnesota Department of Education. This greater local autonomy, it was argued, would create a different and more effective political base by building a support system among local businesses, industries, and educational institutions.

> Organize a power/control base for secondary vocational programming. The current/existing State Department of Education structure (*top-down*) is out-of-touch with the immediacy of secondary vocational circumstances in Minnesota schools. Unless a significant base is established, secondary vocational education as we know it will not exist in two years or less.
>
> I hope this is going to amount to more than the perpetuation of top-down management. We need to get involved with people--especially we need to work with school teachers, counselors, and adminstrators. It is at the local level that programs thrive or die.

Build flexibility into the system. Closely related to the desire for less structure imposed by the state agency was a view expressed in various ways that vocational education could be improved if there were greater flexibility in the regulations governing vocational education. One example of current inflexibility is that of the specifications some programs must meet in order to be reimbursed by state vocational funds. These specifications can be barriers to offering more relevant and worthwhile programs to students.

Think of education as one system. Another suggestion about structure had to do with the need to conceptualize education as one system, to think of education as a system beginning in nursery school and continuing through life-long adult education programs. Vocational education would be one component in this system and would be planned and implemented as part of the whole. This revision of the educational system also would mean that aspects of vocational education which are now usually developed and operated independently (e.g., secondary, post-secondary, and adult programs) would be created as one, more coherent system.

Assure access by all. Vocational education is both criticized and complimented on the extent to which it serves students who are considered of low and average ability academically. The majority of the symposium participants seemed to believe that vocational education should continue to serve and be concerned about the least advantaged of the students in the school system. For vocational education to turn its back on students who need extra or different instruction and who are not well served by "academic" programs would be socially and morally irresponsible. However, participants expressed a re-vision of vocational education which would include all students regardless of their estimated academic aptitude, their socioeconomic status, their gender, or their race. The goal would be to have all students gain access to vocational education.

> Identify "transferable skills" applicable to *all* (or at least most) vocations and ensure that all students receive and achieve them prior to graduation from high school.
>
> We need a normal distribution of students in vocational education--not a skewed sample.

Offer courses rather than programs. Another suggestion related to structure had to do with offering courses rather than programs in vocational education. Underlying this suggestion is the view that courses can offer greater flexibility and relevance to students than can programs which lock students into more rigid sequences of predetermined courses.

> **Think of vocational education as courses--not programs. Develop courses in work ethics, mentorship in co-ops, technical writing, and critical thinking.**

Integrate Vocational Education with the Rest of Education

The concept of integration ran through many of the recommendations for improving vocational education in the secondary school. These suggestions had to do with vocational education as part of the comprehensive high school, vocational education as both differentiated from and integral to nonvocational education, and vocational education as a means for unifying one's life roles.

Initiate integration into the comprehensive school. One of the symposium participants wrote,

> **Until we have support from the academic community of education that vocational education is a necessary part of the high school and enhances the educational institution, it will be difficult to make vocational education better.**

Most vocational educators seem to believe that recognition and approval by nonvocational educators are prerequisites to offering students vocational programs which enhance their lives. Some people indicate that the place to initiate this integrated vision of vocational education is in the mission statements prepared by public comprehensive schools.

Work at differentiating and integrating subjects. One of the most common suggestions for improving vocational education dealt with the dual task of more clearly differentiating what is to be taught in each of the subjects in the school curriculum and more mindfully integrating selected understandings and skills into many or all of the subjects.

For vocational education, the task of differentiation involves clarifying for ourselves the content and learning processes on which we intend to concentrate--in each of our vocational areas. Once this clarification occurs, the purposes of vocational education need to be discussed with other educators in the system to a greater extent than they have been in the past.

The task of integration seems best accomplished by discussions among educators representing all subjects in the curriculum. Educators at the symposium spoke often of the need to integrate more "basics" (e.g., mathematics, science) into the vocational education curriculum.

> **Move toward the notion of providing another way of learning the concepts in math, science, social studies, and English.**

> Strive for greater integration of the content of basic academic disciplines with whatever is considered to be vocational education.

Integration which runs the other direction--that is, integration of concepts and skills thought to belong to vocational education into other subjects--was not mentioned as frequently by symposium participants. One participant wrote, "Relate occupational skills to basic skills and vice versa. Accept the supposition that work and career preparation is a part of all education." Perhaps this idea warrants more consideration. What do we in vocational education teach which we think could/should be taught in other subjects?

Aim at unifying life roles. Educators at the symposium also spoke of the importance of helping students find meaning and purpose in life. One way to help develop this meaning and purpose is to help students integrate various aspects of their lives so that they are compatible and contribute to one another.

> Move to a more holistic conception of life and occupation. This will include a conception of career in which occupation is seen not merely as a job but as a way of life involving purpose and meaning.

Improve the Competence of Vocational Educators

Many of the suggestions for making vocational education better for students involved improving the competence of vocational educators. Suggestions were categorized under the headings of recruiting better educators, improving competence, and strengthening preparation for leadership roles.

Recruit better vocational educators. Symposium participants felt that more attention should be paid to the selection of individuals entering the vocational education profession.

> To get better teachers, we need to get better students into teacher education programs. Currently, that's hard.

Although not discussed in depth, it was mentioned that high school students could be encouraged to consider careers in vocational teaching through vocational youth organizations.

Improve competence of existing practitioners. There was a call for "a commitment to providing teacher education coursework that will enhance the quality of instruction in vocational education." Participants suggested additional coursework in work ethics, instructional techniques in higher order (critical) thinking, entrepreneurship, use of instructional methods to enhance student learning, and technical updating. Clearly voiced was the need to keep current with technology--both the general nature of technology and specific applications in work settings.

> Truly address technology with rigor.

> The programs I teach would never survive if I didn't have to do self-studies, work with industry, and keep relevant.

There was discussion of the importance of writing proficiency and mathematics skills in the work place. Participants seemed to agree that vocational educators could be much more rigorous in these areas. Communication skills greatly affect achievement prospects and can't be ignored by vocational educators.

Counselors, it was mentioned, need more career awareness. One participant suggested that counselors should be required to have "at least five years experience in learning something about the structure of occupations."

Emphasize leadership skills and roles. To accomplish some of the desired changes would require changing attitudes. Changing attitudes means "teachers should take part in the reconceptualizing and mobilizing of a vision." The term "leadership" was brought up over and over.

> Be proud of what we are and assume a positive leadership role to improve all education.
>
> It would require strengthening leadership (e.g., initiatives within) and strengthening teachers.
>
> We hope to be training teachers to assume leadership roles.
>
> We must become leaders of people in reality as well as in title or position. I hope this is going to amount to more than perpetuation of top-down management. We need to get involved with people . . . especially we need to work with school teachers, counselors, and administrators. It is at the local level that programs thrive or die.

Set an Agenda for Action

During the symposium a number of specific suggestions were made that could be implemented in the short run with the promise of making vocational education better for students. The suggestions follow.

Commission a task force on the future of vocational education in the secondary school. The task force should focus on providing a clearer vision for secondary vocational education. Members of the task force should represent the various stakeholders in vocational education, including "a large representation outside of the vocational education family." The task force must also have members, "who believe in it (vocational education) at K-12."

Organize a power base. Efforts should be expended to identify a power base of interest groups to influence the resources available to improve vocational education. The power base development should include "bottom-up" involvement of students and teachers. As one participant noted, the power base should "incorporate the bottom-up theory utilizing committees that will be involved in the decision-making process." Another participant put it this way: "Once we get consensus (on direction), we need to figure out where that power base is and make it work for us."

Develop a venture capital fund. Funds must be identified and made available for providing incentives and opportunities to improve the quality of and access to vocational education for secondary students. An "excellence fund" of this kind might be developed by setting aside a portion of categorical aids now appropriated by the legislature for secondary vocational education.

> We need a new funding formula for secondary vocational education that rewards quality, and we need venture capital for research and development.

Establish partnerships with industry and community-based organizations. Cooperative and collaborative arrangements between vocational education and business and industry can assist in addressing resource and relevance issues. Coalitions with community-based organizations can also assure relevance of services (from the perspective of individual needs) and improve coordination of services. Vocational education's connection to present and future life roles of students demands that schools also be connected in formal and informal ways with industry and the larger community.

> Vocational education should be mainstreamed to be part of every element of the curriculum, K-12. But vocational education won't achieve the credibility to implement that understanding unless the system is pressed by the outside community--business, labor, and public agencies--to understand that employability is the primary product of K-12 education. To me, reconstructing vocational education is part of a larger task of reconstructing our attitudes to see education as one system working with other community systems to develop healthy, productive citizens.

Team with other educators. Cooperation between vocational educators and other educators can increase mutual understanding of common and unique objectives. The scope and sequence of the instruction process can be enhanced. Instruction can be better articulated to improve all components of the educational system.

> Link secondary, postsecondary, and adult vocational education and an open delivery system with equal access for all secondary students.

The idea of teamwork with other educators has already been noted in statements such as,

> Until we have the support of the academic community of education that vocational education is a necessary part of the high school and enhances the educational institution, it will be difficult to make vocational education better.

> We need to get involved with people . . . especially we need to work with school teachers, counselors, and school

> administrators. It is at the local level that programs thrive or die.

Inform the public. Re-education about the goals, mechanisms, and achievements of vocational education should be emphasized. As one symposium participant noted,

> Whining and complaining about the sorry state of vocational education will kill it more quickly than anything else. By the same token, publicity that does not reflect reality will be met with derisive laughter.

The suggestion is that public communications about vocational education should emphasize a more positive, proactive position. As noted by other participants,

> Recognize that many good things are happening in secondary vocational education--capitalize on these strengths, admit the limitations, plan for improvement, and take action!
>
> Tell students, parents, employers, and educators about the value, accomplishments, and use of vocational education in living a successful and fulfilling life.

Demonstrate improved programs. More effort needs to move beyond simply words to the implementation of model or experimental programs. These programs could be used to demonstrate and evaluate program improvements for others to see and, where appropriate, adapt within a short period of time. We need to "get a school district to cooperate and show the rest of the state and country what vocational education can be or how it should be--take what's been formed and apply it."

Revise policy. A critical examination of the short- and long-term consequences of present federal, state, and local policy should be made. Gaps in policy should also be considered. Suggestions for improvement need to be made explicit for professional and public debate.

Improve planning. More comprehensive planning of vocational education should be attempted in the context of societal needs and the vocational development process for individuals. Closer review should be given in this plan to the relationship between the components of an education relevant to an individual at a particular time (e.g., social studies, English, vocational education) and the relationship of educational components over time (e.g., elementary, secondary, postsecondary).

Hold another symposium. Several participants recommended holding additional symposia on the topic of secondary vocational education. The symposia should try alternative formats such as having the students of vocational education seated in the inner circle and educational leaders in the "listening" outer circle. Or legislators could be in the center with a combination of vocational and nonvocational educators in outer circles.

Closing Perspective

This symposium was designed around the central idea of having a "conversation" about one's vision of vocational education in the secondary school. As with most good conversations, after the symposium got going, it was difficult to sort out teachers and learners among the participants--rather the roles seemed to switch quite often. Another characteristic of a conversation became apparent, there is no one best place to start--it doesn't make very much difference because after a while the group gets around to the issues considered important. Conversations also do not have neat ending points--that is, there is usually some externally imposed schedule or happening that brings them to a close, and then only until the group meets again. This was true for the symposium as well. We trust the participants will continue the conversations initiated at the symposium at future times when they come together. For this reason, there can be no complete or final report of the symposium.

As with a conversation, we found participants striving to learn other persons' perspectives--to listen hard. The result was more understanding of what others meant, and, thereby, an uncommon (considering the short time together) feeling of trust and willingness of participants to speak their minds.

Last, everyone takes away something from a real conversation--often it may be something different for each participant. This was no doubt true for the symposium participants--another reason this report can never be truly complete. Our challenge to the participants was, "Don't wait for our report. Take what you've learned at the symposium about making vocational education better for students in secondary schools and start doing it now in your own way!"

APPENDIX

SYMPOSIUM PROGRAM AND PARTICIPANTS

A Re-Vision:

Vocational education in the secondary school

Minnesota Research and Development Center
for Vocational Education
Department of Vocational and Technical
Education
University of Minnesota
St. Paul, Minnesota 55108

THEME: A Re-Vision: Vocational Education in the Secondary School

ASSUMPTIONS:

1) Vocational education needs to be done to prepare people for their life roles (e.g., in families, businesses, organizations, agencies).
2) Vocational education is done in a wide variety of places (e.g., schools, homes, organizations).
3) The secondary school is one appropriate place for vocational education to take place.
4) All people need vocational education.

QUESTIONS:

1) How can we make vocational education better for secondary school students?
2) What knowledge and assumptions undergird recommendations on making vocational education better?

PURPOSE: To "re-look" at the purpose and practice of vocational education in the secondary school with an "eye" toward improvement based on the discussions of nationwide studies and perspectives.

Logo design: Jim Kiehne

May 8-9, 1986 Symposium
R380 Vocational and Technical Education Building
Department of Vocational and Technical Education

Thursday, May 8		**Presenter**
8:30 am	Registration and Refreshments	
9:00	Welcome and Overview of Symposium	George Copa
9:30	Presentation 1: *Improving Secondary Vocational Education*	Harry F. Silberman
9:50	Responses and Discussion	Nan Skelton Wesley Tennyson
10:50	Break	
11:05	Presentation 2: *Work, Vocational Studies and the Quality of Life*	Arthur G. Wirth
11:25	Responses and Discussion	Cliff Helling Frank Kenney Helen Henrie
12:25 pm	Lunch in Campus Dining Center	
1:45	Presentation 3: *Major Issues in Vocational Education in the Year 2000*	Marvin Feldman
2:05	Responses and Discussion	Tom Peek Gen Olson Frank Starke
3:05	Break	
3:20	Open Discussion	George Copa
4:20	Adjourn for the day	
4:30	Reception in Atrium	
Friday, May 9		
8:00 am	Refreshments	
8:30	Introduction	Jane Plihal
8:40	Presentation 4: *Beyond Tinkering: Reconstructing Vocational Education*	Jeannie Oakes
9:00	Responses and Discussion	William Gardner Dayton Perry Jan Hively
10:00	Break	
10:15	Presentation 5: *Occupationally Specific Training in High School*	John H. Bishop
10:35	Responses and Discussion	Gordon Swanson Daniel Mjolsness Don Szambelan
11:35	Lunch in Campus Dining Center	
12:45 pm	Reflections	Jane Plihal
1:00	Open Forum	
2:00	Adjourn	

PROGRAM COMMITTEE

George H. Copa, *Professor and Chair, Department of Vocational and Technical Education, University of Minnesota*

Jane Plihal, *Assistant Professor, Department of Vocational and Technical Education, University of Minnesota*

Marilyn Johnson, *Graduate Assistant, Department of Vocational and Technical Education, University of Minnesota*

PRESENTERS

John H. Bishop, *an educational economist, is the Director of the Center for Research on Youth Employability at The Ohio State University. He also serves as Associate Director for Research of the National Center for Research in Vocational Education.*

Marvin Feldman *is the President of the Fashion Institute of Technology in New York City and a former member of the National Advisory Council on Vocational Education.*

Jeannie Oakes *is a social scientist with the Education and Human Resources Program at the Rand Corporation in Santa Monica, California. Her most recent book is entitled* Keeping Track: How Schools Structure Inequality.

Harry F. Silberman *is a Professor of Education at the University of California at Los Angeles. He served as chair of the National Commission on Secondary Vocational Education which resulted in* The Unfinished Agenda.

Arthur G. Wirth *is Professor Emeritus of History and Philosophy of Education at Washington University in St. Louis. He has written extensively on the work of John Dewey, technology, education, and work.*

DISCUSSANTS

William Gardner, *Dean, College of Education, University of Minnesota*

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Frank Kenney, *Executive Director, Project for Pride in Living (PPL) Industries, Minneapolis*

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